Major Research Paper

Assessing the Role of Parental Power Distribution on Child Health in Nigeria

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Abstract

As the most populous country of Sub-Sharan Africa, Nigeria represents nearly a third of the total of under-five year old deaths due to malnutrition in the region (UN IGME, 2019). Much research has focused on the role of mothers and household socioeconomic status, with far less inclusion of paternal characteristics in explaining child health outcomes. This study examines the relative impacts of socioeconomic status, maternal and paternal resources, and maternal autonomy on child health outcomes (stunting, wasting and underweight) in Nigeria, by assessing the Absolute Resource Theory, Relative Resource Theory, and Gender Theory. The findings indicate that household access to socioeconomic resources, not individual resources or maternal autonomy, predicts child health in Nigeria. As such, these results suggest that greater attention should be paid to eliminating poverty, conflict and inequality, rather than focusing on solutions that target individual mothers or fathers.

Introduction

A fundamental right of every child is the right to life and survival (UNICEF, n.d.). Improving child health outcomes continues to be on the agenda of global, regional and local authorities, signifying the importance of child health outcomes as a measure to evaluate progress made towards sustainable development, especially in Sub-Saharan Africa (National Academies of Sciences, 2017). Many scholars have linked child health outcomes such as stunting, underweight and wasting to mother's health, education and income (Carlson et al., 2015). However, it is less clear whether these resources themselves are what benefits child health or if maternal access to these resources leads to higher levels of maternal autonomy, which offers the main benefits to child health status (Carlson et al., 2015). Owing to an entrenched patriarchal family structure in Nigeria, maternal autonomy or child health cannot be considered in exclusion of the status of fathers, and at the time of this research, no study was found to have examined the role of father's status on both maternal autonomy and child health. Therefore, this study will examine the influence of maternal autonomy on stunting, wasting and underweight, controlling for the socioeconomic and demographic indicators of both mothers, fathers and the household, including education, wealth, employment status, place of residence, region and religion, using the 2018 Nigeria Demographic and Health Survey (NDHS). I argue that maternal autonomy may be important to child health outcomes, but given the culture of paternal control, overall household access to economic resources play a more vital role in determining child health outcomes.

Global health responses and prior studies have focused on proffering individualized solutions to the problem of malnutrition among children, including improving maternal and paternal education and level of income and maternal autonomy, with only a few studies focusing

on the macro or societal structures that contribute directly or indirectly towards child health, such as absolute poverty, economic and gender inequality. Thus, this study seeks to contribute meaningfully to the literature on child health outcomes in Nigeria by focusing on the gendered nature of child health care, with respect to the power structure within the family, where men are likely to be more dominant decision-makers on most issues. This study, therefore, provides empirical evidence to policymakers and policy influencers alike on the implication of maternal autonomy on child health. Furthermore, the dominance of female-centred literature on the influence of parental characteristics affecting child health creates an opportunity to add to the existing literature on the characteristics of male partners/husbands affecting child health directly, or and indirectly through maternal autonomy. This viewpoint is imperative considering the patriarchal nature of most African societies, where women/wives are typically subject to their husband's authority.

Literature Review

Overview of Child Health and Survival

According to the United Nations Children Education Fund (UNICEF, 2019), over 200 million children under-five around the globe are subject to unfavourable, socio-economic, environmental and health conditions that, can lead to otherwise preventable deaths. To address this issue, the Sustainable Development Goals (SDGs) of the United Nations (UN) seek to "ensure healthy lives and promote wellbeing for all at all ages", with a specific target that aims to end the preventable deaths of newborns and children under-five (UN DESA, n.d.). Recent reports by the United Nations suggests that considerable progress has been attained in child survival over the years, with a 59% decline in child mortality for children under-five between 1990 and 2017; from 93 deaths per 1000 children under-five to 39 deaths per 1000 children

under-five (UN IGME, 2019). Despite the positive strides made by governments and non-governmental organizations to reduce mortality and improve child health globally, this mortality rate is still high compared to the SDG target of 25 deaths per 1000 children under-five (WHO, 2019).

Further, compared to these global trends, Sub-Saharan Africa fares even worse, with the highest reported number of under-five deaths globally in 2018, accounting for 52% of the total global deaths of children under-five. Within Sub-Saharan Africa, Nigeria represented 31% of the region's total under-five deaths in 2018, totaling 2,789,000 lives lost (UN IGME, 2019). Nearly half the total number of deaths to children under-five are caused by malnutrition (UNICEF, 2019); defined as "the deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients (WHO, 2019). These data reveal the deplorable state of child health in Sub-Saharan Africa and Nigeria in particular, indicating the need for urgent and deliberate actions and interventions.

The Nigerian Context

With a population of approximately 202 million people, Nigeria is the most populous country in Africa and has over 250 ethnic groups (World Bank, 2020). The country occupies a land area of 923,768 sq km, almost the same size as the Canadian province of British Columbia, and is greatly endowed with natural resources (United Nations, n.d). Nigeria's primary export product is crude oil, possessing the largest reserve of crude oil and gas in Sub-Saharan Africa (World Bank, 2020). Despite this great endowment of natural resources, poverty levels are high in the country with the greatest concentration of poverty and child malnourishment located in North-East and North-West regions (see Figure 1 below), with a national poverty headcount ratio

at 36% and a regional poverty headcount ratio of 48% in the NE and 59% in the NW (World bank, 2016).

These patterns may also be influenced by the low level of education in these regions, as the median years of school completed is 0, while the southern regions have median years of 11 (National Population Commission (Nigeria) & ICF International, 2019). The poor education completion rate is also likely due to long-standing structural problems in the NE and NW regions, in addition to more recent increases in terrorist attacks since 2009. As such, there has been a growth in the displacement of persons and a decline in economic activities in Northern Nigeria (Uchechukwu et al., 2020).

Compounding the problems associated with poverty in the Northern regions is also a disproportionately high fertility rate; averaging 6.4 births per woman, compared to the southern region's average of 4.2 births per woman (National Population Commission (Nigeria) & ICF International, 2019). This combination of poverty and high fertility rates means accessing health care facilities becomes even more difficult for the already resource-poor households who have more family members with health care needs. Evidence from the 2018 NDHS reveals that maternal health care service utilization is lowest in the NE and NW region, as 28.5% and 36.3%, respectively, do not receive any form of antenatal care. Additionally, all of the problems have further been shown to be correlated to the disproportionately high rate of child malnutrition overall in Nigeria.

Child Malnutrition

Malnourished children face not only starvation but are also at greater risk of dying from common illnesses such as malaria, pneumonia and diarrhea. At the population level, this

malnutrition is typically measured in terms of rates of stunting, wasting and underweight (WHO, 2019), which are the measures used in this study, as proxy measures of child health.

Stunting describes impaired physical growth in children over time, indicated by low height for age (WHO, 2019). The World Health Organization measures stunting as two standard deviations below its Child Growth Standards median. According to UNICEF (2020), this condition caused by poor nutrition, repeated infection, and inadequate psychosocial stimulation, has declined in children under-five globally, from 32.4% in 2000 to 21.3% in 2019.

Wasting, the condition of severe rapid weight loss within a short period in children, is also due to a lack of food or exposure to infectious disease such as diarrhoea. If left untreated, wasting can also lead to death (UNICEF et al., 2020). Wasting in children is measured based on weight for height Z-score, with the criteria for wasting as two standard deviations below the median (National Population Commission (Nigeria) & ICF International, 2019). The World Health Organization estimates that 47 million children under-five years old are wasted, from which 27% (12.7 million) are from Africa (UNICEF et al., 2020).

Finally, underweight is measured as weight for age two standard deviations below the WHO Child Growth Standards median, (WHO, 2019). Underweight children may also be stunted, wasted or both. However, like with stunting and wasting, underweight children are at greater risk of mortality. (Van de Poel et al., 2008; World Health Organization (WHO), 2018).

Stunting, wasting and underweight is most prevalent in middle or low-income countries, including Nigeria where 37%, 7% and 22% of children under-five are estimated to suffer from stunting, wasting and underweight, respectively (National Population Commission (Nigeria) & ICF International, 2019). These countries cannot also mitigate the effects of malnutrition, such as

weakened physical and cognitive development, low educational performance, limited economic involvement, negative maternal health in adulthood, life-long disabilities and mortality (Akombi et al., 2017). These conditions not only cripple the future of the individual children affected by inhibiting their physical growth and development and limiting their future opportunities, but the consequences of malnutrition also pose a threat to the overall health of these societies and the wellbeing of subsequent generations.

In teasing out ways to reduce stunting, wasting and underweight, social scientists have considered the association between malnutrition in children and social phenomena such as education, poverty and inequality or access to material resources, maternal roles, cultural norms, and religion. Malnutrition may also be attributed to environmental factors such as unclean water, unhealthy food, poor sanitary conditions or broader socioeconomic factors that limit access to the resources required for basic survival (Yaya et al., 2020). Hence, according to UNICEF et al. (2020), finding solutions to these challenges may free the world from various forms of malnutrition.

Education and Child Malnutrition

Education has been found by several scholars to have a significant association with child health outcomes, particularly in middle and low-income countries. In fact, some argue that parental education has made a greater contribution to malnutrition decline than the provision of health care services (Abuya et al., 2011, Aslam & Kingdon, 2012). Numerous researchers have found that mothers who were educated were less likely to have children who had poor health than uneducated mothers (Aslam 2012; Asuman et al., 2019; Habimana and Biracyaza 2019; Natarajan, 2013; Shahraki et al., 2018). Explanations for the value of maternal education have varied but suggest that educated mothers are more likely to understand the importance of good

hygiene, the nutritional value of food, and safer food preparation techniques, either through their education itself or through their increased exposure to media (Akombi et al., 2017). They also are more adaptable to modern medicine, have better access to health care services, and are better prepared to diagnose and solve their children's health challenges (Asuman et al., 2019).

The importance of mothers' education to child health in Nigeria is highlighted in Agu et al.'s (2019) and Akombi et al.'s (2017) studies, who found that mothers who were highly educated were less likely to have malnourished children. They attributed their findings to better understanding and utilization of maternal health services and the prospect of gainful employment, leading to increased income which may be crucial to better child health outcomes, through the provision of nutritious food, good clothes and other basic needs. Taking a different approach by examining medically related contributors to stunting decline in the Sub-Saharan African region, Buisman et al. (2019) found that parental education levels heralded increased levels of immunization, intake of iron supplements and deworming medications.

Some studies have tried to make comparisons between the influence of fathers and mothers' education on child malnutrition to determine which parent's education is more important to the decline of this condition. Vollmer et al. (2009) and Aslam and Kingdon (2019) found that mothers' education was more important to child health than fathers' education because mothers are more likely to participate in daily health decision-making as primary care providers of children.

Material Resources: Income and Employment

Not all agree that parental education is the most important solution to reducing risks of malnutrition in Sub-Saharan Africa. For example, Lindeboom et al. (2009) and Abuya et al. (2011), found no evidence of an association between parents' increased years of schooling and

improvement in child health, after controlling for demographic, socioeconomic status, and exposure to media (via radio, tv and newspaper). Although, Abuya et al. (2011) suggested that their null finding was due to a small sample of mothers with primary and secondary education analyzed. Nonetheless, others have pointed to a greater problem of structural inequality and a lack of access to basic material resources as more important causes of child malnutrition, particularly in Sub-Saharan Africa and South Asia (Van de Poel et al., 2008). In other words, education may lead to greater material rewards but a lack of education itself may not be the cause of poor child health outcomes.

In a study of developing regions, Van de Poel et al. (2008) found that children from advantaged groups were more likely to have better health outcomes than children from disadvantaged groups, and this inequality was more pronounced in stunted children than wasted children. Urke et al. (2011) also found that income and occupation were the main contributors to the socio-economic status of individuals and households in Peru, though education also mattered. Similarly, in their analysis of Sub-Saharan African countries (Ethiopia, Ghana, Kenya, Lesotho, Namibia, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe), Asuman et al. (2019) concluded that stunting has steadily declined in these countries, but remained prevalent among economically disadvantaged households. The authors explained that in Sub-Saharan African countries, wealthier families can provide better health care for their children than poor families, leaving poor children vulnerable to diseases and infection. Using the wealth index, Abuya et al. (2011) and Urke et al. (2011) also found that increased household wealth led to a significant decrease in child stunting, further amplifying the argument that increased household wealth is crucial to reducing or eliminating malnutrition.

Mixed results have been found on the association between maternal employment and child health. Habimana and Biracyaza (2019) found that children with mothers who were categorized as skilled, professional or self-employed were less likely to be stunted than children who have mothers in other occupational classifications. On the contrary, Urke et al. (2011) found that children with mothers who were not in the labour market had a lower prevalence of stunting than children whose mothers participated in the labour market, hypothesizing that the non-participating mothers were able to do so because their husbands or partners received sufficient income to cater for the household. Supporting this finding, Burroway (2017) found that employment did not affect child stunting when controlled for wealth and education, revealing that mother's employment may be correlated with the more important factors of household wealth and education in predicting malnutrition.

Given that personalized factors such as education, income and employment have been found to play a crucial role in reducing negative child health outcomes, it is important to note that a "one size fits all" approach cannot be adopted in proffering solutions to this problem in Sub-Saharan Africa countries, bearing in mind that these countries are significantly different geographically and culturally.

Geographic and Cultural Diversity

Scholars have explored geographic inequalities, where rural areas are found to have higher levels of malnutrition than urban areas (Habimana and Biracyaza, 2019). Akombi et al (2017) and Asuman et al. (2019) cited poor infrastructural development in rural areas as the root cause of this outcome, as health facilities in these areas are usually under-equipped to provide primary health services. Other challenges include lack of access to potable water, good housing, and good hygienic environment, leading to poor adult and child health outcomes. Residents in these areas

are likely to dwell there due to heightened levels of inequality between the rich and the poor making it nearly impossible for low-income people to secure housing in urban areas. Yaya et al. (2020) also found that more children in rural areas were stunted but attributed this finding to the food insecurity and large family sizes in these areas. Again, this suggests that the regional differences in health outcomes are due to regional differences in poverty and access to resources.

Although many studies have sought to find associations between household and individual-level factors have on child health outcomes, few scholars have investigated the association between religion and child health, considering its relevance in shaping attitudes and behaviours of people in developing regions such as Sub-Saharan Africa (Karlsson, 2019). In a review of the literature, Solanke et al. (2015) revealed that the beliefs, doctrines and practices of certain religious groups could have effects on health service utilization. The authors explained that Christian Jehovah's Witnesses, for example, prohibit their members from accepting blood transfusion based on their reading of the Bible. Other Christian groups preach that poor health outcomes are a punishment from God for their faithlessness, thus prioritizing faith in God over seeking medical help. Similarly, some Muslims distinguish between illnesses or conditions which should be treated medically and those which are accepted as the will of God and should not be treated through medical means (Solanke et al., 2015).

Empirically, Ukwuani & Suchindran (2003) found that children born to Christian mothers were less likely to be malnourished than children born to mothers who practised other religions, which they explain was as a result of differences in theological attitudes and beliefs. Karlsson (2019) found that children who lived in all-Muslim communities fared worse than children who lived in all-Christian or mixed religion communities. However, as Karlsson (2019) cautioned, these findings should not be interpreted as causal explanations for child malnutrition;

predominantly Muslim regions may also be characterized by greater levels of poverty or be in rural areas which are also associated with child malnutrition. Other scholars have also observed negative health outcomes for Muslim children in Sub-Saharan Africa, but attribute this to lower socio-economic levels, vaccination rates, usage of maternal and child health services and higher fertility levels (Akombi et al., 2017). In other words, Islam is not said to *cause* stunting, but regions with high numbers of Muslim residents have been shown to have high levels of stunting. More qualitative studies are needed to provide an in-depth understanding of these relationships.

These findings are consistent with the findings of Akombi et al. (2017) who also found that Muslim children, predominantly in the Northern region of Nigeria had a greater chance of being stunted than children in the Southern region. Further, high poverty levels in the Muslim-dominated Northern regions prompt parents to send out their children to seek alms to support the family and in doing this, these children consume left-over food gotten from restaurants and other odd locations, thereby exposing them to further poor health conditions, physical and environmental dangers (Abiodun et al., 2019). The North West (59%) and North East (48%) regions have the highest and second-highest poverty headcount ratio in Nigeria and are also traditionally Muslim areas (World Bank 2016). In recent times, these regions have also been subject to terrorist attacks, leading to the displacement of many inhabitants within the regions and a loss of agricultural produce and livestock. Akombi et al. (2017) suggest that the higher rates of child stunting in the Northern than Southern regions were likely due to differences in regional cultural beliefs, such as the minimal consumption of certain nutritious foods. However, they also point to the prevalence of terrorist attacks in these regions as another cause, as this violence has led to a loss of livelihood for many residents. Further evidence for this was found in a comparative study by Dunn (2018) predicting wasting before and at the time of terror attacks in

North-East Nigeria (2009 till date), showing that children would have been 13 percentage points less wasted without the terror attacks in the North East.

Hence, the risk of malnutrition predicted in these regions may be attributed more to poor socioeconomic, conflict and environmental conditions than to religious differences. However, the religious differences may be correlated with another important factor predicting child health: maternal autonomy. In a study using the 2013 NDHS, Umar (2017) defined maternal autonomy in Nigeria in terms of women's ability to make reproductive health decisions independently, finding that women who practice Islam and reside in rural and Northern regions in Nigeria had little or no form of autonomy. He further suggested that this may also be due to the poor socioeconomic and the state of conflict in the North.

Maternal Autonomy

There is clear evidence of men's strong influence on maternal health decision-making overall in Nigeria, as survey data has shown that only 44% of Nigerian mothers participate in their own health care decision-making (National Population Commission (Nigeria) & ICF International, 2019). Further, scholars have identified that maternal decision-making ability within households improves child health status, as mothers with greater autonomy are more likely to allocate household resources towards child health and nutritional improvement and are more likely to use health care services themselves (Carlson et al., 2015).

Maternal autonomy in recent times has been projected as a determinant of under-five health status, where scholars have provided various definitions to this concept. In a review of literature on maternal autonomy and child health outcomes, Carlson et al. (2015) defined autonomy as a "multidimensional construct, consisting of dimensions such as the ability to make purchases and control resources, the ability to make decisions about health care or childcare, and the experience

of domestic violence" (pg 460). These dimensions have been applied to draw associations between autonomy and child health outcomes, though findings have been mixed suggesting there is no "one size fits all" relationship between maternal autonomy and child health (Carlson et al., 2015). For example, Shroff et al. (2011) defined maternal autonomy in seven different dimensions which include decision-making at the household level, decision-making on child health, financial autonomy, economic mobility autonomy, free movement autonomy, and acceptance and experience of domestic violence. Similarly, Smith et al. (2003) defined autonomy as "the power of women relative to men", conceptualizing power as control over personal and household resources.

Using the Demographic Health Survey data (2000), Smith et al. (2003) conducted a study on the importance of women's status for child nutrition in developing regions of South Asia, Africa and Latin America. The study found that in all three regions, there were significant associations between women's socioeconomic status and child health, with an increase in the former leading to improved child health outcomes. A different study by Shroff et al. (2009) made use of the variables financial and mobility freedom to measure maternal autonomy and examine its relationship with child stunting. The study observed a significant relationship between maternal autonomy and child health, but without controlling for other demographic and socio-economic variables.

One important form of maternal autonomy is a mother's ability to make health-related decisions for her and her child. This form of autonomy examines the relationship between maternal autonomy and child health because it provides a clear indication of a woman's control over her body and her ability to make the best health decision for the child. Hence, this form of autonomy is adopted in this study to explain the relationship between maternal autonomy and

child health outcomes. Mashal et al. (2008) found that children in Afghanistan were statistically significantly more likely to be strongly malnourished when their mothers had lower autonomy, measured as her ability to take her child to the hospital without the permission of her husband or being accompanied by another person. Similarly, Shroff et al. (2011) found that children with mothers who were free to make decisions on when to visit the hospital experienced better health outcomes than those whose mothers were not free to make that decision.

Following an extensive literature search, only two studies were found to have considered the association between maternal autonomy and child health in Nigeria. A study by Smith et al. (2003), using 36 Demographic and Health Surveys (1990 to 1998) conducted in South Asia, Sub-Saharan Africa and Latin America and the Caribbean, found a strong positive association between maternal autonomy and underweight. The study defined maternal autonomy as women's power relative to men, at both the household level and community level, using proxy variables such as mother's level of education, age and employment status as measures of autonomy. These indicators may not be adequate measures of maternal autonomy in Nigeria because they do not reveal the experience of mothers within the household but assume that mothers who are educated, employed and of greater age have greater autonomy, which may not always be the case.

The other study by Agu et al. (2019) operationalized maternal autonomy in Nigeria using four dimensions; household decision-making, financial decision-making, domestic violence and couple power relations. According to the study, after controlling for socio-demographic variables, two dimensions of maternal autonomy (domestic violence and couple power relations) had a positive relationship with child nutrition. Given that household decision-making in the study was a composite variable (decision-making on household health care, major household

purchases and a visit to family and friends) and the socioeconomic variables of fathers were not captured, we still do not know if mother's ability to make decisions on maternal and child health and fathers socioeconomic status has an association with child health in Nigeria when controlled for individual and household socioeconomic variables. Therefore, there remains a question in the literature as to the role of fathers' socioeconomic status and child health in Nigeria.

Men's Familial Roles in Nigeria

Most research has focused on the role of mothers on child health, however, relatively few studies have also considered the role of fathers, even though in many developed and developing countries fathers are normatively charged with the responsibility of breadwinning, that is, providing necessities (food, clothing and shelter) for the household (Akanle & Nwaobiala, 2019). Fathers may have not only a direct impact on child health through their financial contributions, but they may also play an indirect role in child health through maternal autonomy. However, at the time of this research, no study was found to have considered this association in Nigeria.

In general, research shows that employed fathers with higher levels of education and income have children with better health outcomes (Urke et al., 2011). A study on stunting in Nigeria found that fathers' education was associated with child stunting but that occupational status was not (Akombi et al., 2017). Similarly, Shahraki et al. (2018) found that an increase in fathers education led to an increase in child health; the reason being that educated fathers were involved in making crucial child health decisions within the household. The importance of paternal education was captured in Kamals' (2011) study, where the author found fathers' education to be more important to child nutrition than mothers' education, stating that educated fathers had a higher income to meet the healthcare costs of children and they were also more likely to marry wives who had similar educational levels. A similar finding was recorded by

Alom et al. (2012), however, the authors associated the outcome with the capacity of educated fathers to devote greater consciousness to child health than uneducated fathers.

There are a few studies that find no impact or a negative impact of higher paternal education on child health. For example, Nepal (2018) found that increased levels of father's education had a significantly negative association with child health. The author suggested that this outcome may be as a result of more educated fathers taking up better jobs in urban areas, which in turn hinders them from spending much time with the family. Further findings revealed that fathers who were employed by the government had a higher chance of having a stunted child, but the authors did not report the reason for this outcome. Alternatively, Abuya et al. (2011) and Urke et al. (2011) found no significant relationship between paternal education or occupation and child health outcomes.

Paternal education may also play an indirect role on child health by increasing maternal autonomy, given research showing a positive impact of maternal autonomy on child health (Carlson et al., 2015) and the many studies in Sub-Saharan Africa and South Asia finding links between husband/partner socio-economic status and maternal autonomy. A study in Ethiopia recorded that women whose husbands had at least secondary education were more likely to be involved in decisions concerning her health than less educated women (Alemayehu & Meskele, 2017). Another study found that women with husbands who had secondary school qualification and were employed, stood a greater chance of being autonomous, compared to women who did not have such husbands (Nigatu et al., 2014). Thus, if maternal autonomy impacts child health outcomes and fathers influence maternal autonomy, fathers may be impacting child health indirectly.

Theoretical Approach

Making sense of the empirical evidence for understanding the root causes of child ill health is challenging since the various explanators are so intrinsically intertwined. Nonetheless, in this study, I loosely group the theoretical approaches into three main theories: absolute resource theory, relative resource theory, and gender theory. I then test these three theories to tease out the key determinants of child health outcomes in Nigeria.

Absolute resource theory is applied here to explain how overall household resources determine child health outcomes. Absolute resource theory would suggest that there is a direct relationship between child health and maternal and paternal education and employment, and household wealth (Urke et al., 2011). The greater the material resources one has, the greater access a family has to proper nutrition and health care services that will directly impact child health outcomes. As such, one would expect not only that household wealth and/or other parental resources (education and employment) would increase child health outcomes, but also that regions with higher levels of wealth and access to health care will also improve child health outcomes. As such, I hypothesize that if absolute resources determine child health outcomes:

[H1a] household wealth and/or maternal and paternal educational and employment status will decrease the likelihood of childhood ill-health; and

[H1b] rural areas and the northern Nigerian states will have higher rates of child ill-health.

Despite the simplicity of this theory, the findings that maternal autonomy influences child health outcomes suggest that parental power differences also impact child health outcomes, which may be better explained by relative resources theory (Blood & Wolfe 1960). Drawing on Max Weber's definition of power as "the potential ability of one partner to influence the other's behaviour" (pg. 11), Blood & Wolfe (1960) argue that in relationships, the partner with the

higher resources possesses a power advantage in that relationship (Kulik, 1999). In this context, resource refers to anything that partner A can provide to partner B to meet certain needs of partner B. Hence, the partner who contributes the most resources is said to have the most power in the relationship (Blood & Wolfe, 1960). Some examples of resources include income, education and skills. Similar to social exchange theory, this theory suggests that relationships are based on rewards. Specifically, in the context of marriage, Blood and Wolfe (1960) explained that partners seek companionship, along with physical, social and economic stability (Blood & Wolfe, 1960). In this relationship, partners subtly engage in a trade-off of what is given and what is received. If one is perceived to be giving more than receiving, then that person would be able to exercise more power. For example, a woman might become the caretaker of a home in exchange for her husband's financial contributions. If the man's financial contribution to the sustenance of the family is deemed to outweigh the caretaker role of the woman, the man would attain more household power than the woman. However, on a narrower scale within the home, the competence of mothers in the caretaker role gives her power in that aspect of family life. Thus, for example, husbands may be more willing to grant more decision-making autonomy around childcare than around how to do the family banking. Blood and Wolfe (1960) theorized that if women gain increased access to resources, patriarchy would cease to be the organizing feature of social life. As women attain greater equality in the work force, the balance of power and decision-making in marriages would become equalized as well. If this theory is correct, one would predict that increasing maternal and paternal resources (education and employment) would increase maternal autonomy.

Although we do not find any evidence to suggest that mothers make better decisions on child health than fathers, studies have found that mothers are more likely to be inclined towards

allocating more time and resources towards child well-being, leading to better child health outcomes (Nyqvist & Jayachandran, 2017). Further studies have shown that maternal autonomy improves child health outcomes (Carlson et al., 2015). One would, therefore, expect to see that increasing maternal resources would have at least an indirect positive impact on child health. Given this, we expect autonomous mothers to make child health-related decisions freely (including her own antenatal health care) and expend her own resources towards achieving better child health outcomes, such as purchasing more nutritious food for children. Thus, we hypothesize that if relative resources theory is what matters the most to child health,

[H2a] maternal education and employment will increase maternal autonomy; and

[H2b] maternal autonomy will decrease child ill-health; therefore

[H2c] maternal education and employment, will have *indirect* effects on child health outcomes through maternal autonomy.

Although this theory is compelling, the empirical evidence testing relative resource theory has mostly found that increased access to resources for women relative to men did not change family dynamics in which men hold dominant decision-making power within the household. Rather, according to Gender theory, within patriarchal societies, cultural gender norms play a greater role in family power dynamics than does access to resources (Shu et al., 2013). This theory argues that gender socialization processes lead to a social structure in which power is distributed unevenly based on gender (Jule, 2014; Musalia, 2018). In contrast to the Relative Resource theory which considers marriage an equal playing field for men and women, separated only by their access to resources, gender theory suggests that women are structurally deprived of achieving equal economic and social status relative to men, regardless of whatever resources they are able to accrue (Gillespie, 1971).

Within this framework, gender ideologies, not resources, determine one's sense of self, one's appropriate roles within families and who is to have the most power (Atkinson et al., 2005). Through processes of socialization, those who grow up in patriarchal societies learn, for example, that power among couples and provision of household financial capital resides with the man, while household chores and child-rearing roles are responsibilities of a less powerful woman. However, this theory would also suggest that within an egalitarian society, couples might see childcare and breadwinning as a shared responsibility, holding equal levels of power for both partners. Therefore, gender theory conceives gender roles and power as social constructs laced with cultural norms and roles which are subtly but deeply internalized by individual actors and may vary from one society to another (Jule, 2014). To this end, one would predict that in more patriarchal contexts, such as in rural areas or Muslim households (Umar, 2017), mothers would have less autonomy than in less patriarchal areas. If the research suggesting that women are more attentive than fathers to child health (Nyqvist & Jayachandran, 2017) is true, we would then predict that the relationship between maternal autonomy and child health is rather a spurious correlation due to the association between overall resources and child health. As such, I hypothesize that if gender theory is correct:

[H3a] Patriarchy (measured by religion and northern or rural regions) decreases maternal autonomy; and

[H3b] Paternal education has no significant association with maternal autonomy; and

[H3c] Maternal autonomy has no significant impact on child health, controlling for patriarchy or overall household resources.

Methods

Data

To test these hypotheses, I used the 2018 Nigeria Demographic and Health Survey (NDHS) dataset, a national probability sample with maternal, paternal, child and household demographic and health indicators (National Population Commission (Nigeria) & ICF International, 2019). The sample was selected in a two-step process, where 1400 clusters were selected by probability proportional to size from the sample frame of the Population and Housing Census of the Federal Republic of Nigeria (2006). From this, 30 households were selected from each cluster by equal probability systematic sampling, to a target population of 42,000 households from across Nigeria. The 2006 Census sample frame consisted of administrative units, including states, local governments and wards, which were further divided into Enumeration Area's (EA), regarded as clusters in the 2018 NDHS. The survey had a 99% response rate, with 41,821 women (main respondents) between ages 15 to 49 having completed interviews out of 42,121 women identified to be interviewed. Within this sample of women, there were 12,806 children ages 0 to 59 months, with a 97% anthropometric completion rate. Given this study's focus on child health outcomes, the main data file used in this analysis was the 2018 NDHS Kids Recode data file, where children under 5 years of age are the unit of analysis, and includes anthropometric measures of the children (e.g height, weight), and demographic information on the children, their parents and their household. After listwise deletion was completed, 11,500 valid cases formed the sample for the analyses. It is important to note that the NDHS 2018 is the most recent widely-used demographic data for Nigeria but it only provides a snapshot of the period in which the survey was conducted, limiting the interpretation of findings, as these findings cannot be said to represent social processes or changes over time.

Measures

The dependent variables in this study are stunting, wasting and underweight, based on standardized z-scores calculated by the NDHS, measured in standard deviation units distance from the population median of each child on (a) height for age, (b) weight for height, and (c) weight for age. Based on the World Health Organization (WHO) definition of stunting, the standardized z-scores were recoded into binary variables, with children who scored less than 2 standard deviations below the median ($z<-2$) for each item coded as 1 for "stunted", "wasted" and "underweight", respectively, and those who scored 2 standard deviations below the median age or *higher* ($z\geq-2$) were coded as 0 "not stunted", "not wasted" and "not underweight", respectively.

To test the hypotheses assessing absolute resource theory, relative resource theory and gender theory, this study includes measures of mother's education, employment status, place of residence, region, religion, father's education and employment status, and the household wealth index, all of which were transformed into dummy variables given their original nominal level of measurement. Mothers' education and fathers' education derived by asking parents for the highest level of education completed and was coded as (1) no education, (2) for primary, (3) for secondary and (4) for higher. Employment status of both parents was controlled for and coded as (0) for unemployed and (1) for employed, where the employed category included parents who are employees or self-employed. Overall household wealth was measured with the wealth index variable in the NDHS data, comprised of consumer goods owned and the housing characteristics including floor and roofing materials and source of water. This composite variable is appropriate for estimating household wealth in the absence of consumption expenditure or income variables

(Asuman et al., 2019). Households were divided into quintiles coded as 1 for poorest, 2 for poorer, 3 for middle, 4 for richer and 5 for richest.

The main independent variable to measure maternal autonomy is whether decisions about the mothers' health care are usually made by the mother, the father, both parents or someone else. This variable was transformed into a series of three dummy variables for (1) mother alone, (2) both parents, or (3) the father alone usually makes decisions about the mother's health (the cases where someone other than the mother and/or father usually made maternal health decisions were excluded from the analyses due to an insufficient number of cases (n=22). To further assess gender theory, patriarchal contexts were measured based on religion and region. Given research that Muslim households have higher levels of patriarchy than Christian households (Umar, 2017), household religion was measured based on mother's religion, where Catholic mothers were coded as (1), other Christian mothers as (2) and Muslim mothers as (3), which were then converted into a series of dummy variables with Catholic as the reference category. Rurality is coded as 0 for rural and 1 for urban, where rural would be considered more patriarchal. Regions were converted into a series of dummies for (1) North-Central (2) North-East, (3) North-West, (4) South-East, (5) South-South and (6) South West. North Central region was the omitted category, as it is the location of the nation's capital, Abuja. North-East and North-West, are the regions most plagued by poverty and violence and are considered the most patriarchal.

Statistical Analyses

Using Stata 16.1 statistical software, I first carried out descriptive statistics split by the maternal autonomy item (mother, father and both), stunting item (not stunted and stunted), wasting item (not wasted and wasted) and underweight item (not underweight and underweight), with t-tests to assess differences between the groups. This also provides a first insight into

whether any of the theorized factors—individual resources, maternal vs. paternal resources, or patriarchy—are correlated with maternal autonomy, and then if all of these factors including maternal autonomy are correlated with child health.

To test the hypotheses drawn from the three theories (absolute resources theory, relative resource theory and gender theory) used in this paper, two sets of logistic regression models were estimated. First, a multinomial logistic regression model was used to determine what factors predict maternal autonomy, to assess any indirect effects between resources and child health [H2a, H3a, H3b], estimated as:

(1) $$ln\left[\frac{p}{p}\right] = \beta_0 + \beta_1 X_1 + \beta_{2\ldots4} \ldots X_{(maternal\ characteristics)} + \beta_{5\ldots6} X_{(paternal\ characteristics)} + \beta_{7\ldots9} X_{(household\ characteristics)}$$

where $ln\left[\frac{p}{p}\right]$ is the log odds that a mother will be autonomous, *maternal characteristics* include mother's education, and employment status; paternal characteristics include father's education and employment status; and *household characteristics* include the region within the country, urban/rural, and family wealth index.

Secondly, three binomial logistic regression models predicting child health outcomes (stunting, wasting and underweight), to test the impact of household wealth and parental access to resources [H1a], geographical location [H1b], maternal autonomy [H2b], maternal resources [H2c], and maternal autonomy [H3c] on child health, estimated as:

(2) $$ln\left[\frac{p}{1-p}\right] = \beta_0 + \beta_1 X_1 + \beta_{2\ldots4} \ldots X_{(maternal\ characteristics)} + \beta_{5\ldots6} X_{(paternal\ characteristics)} + \beta_{7\ldots9} X_{(household\ characteristics)}$$

where $ln\left[\frac{p}{1-p}\right]$ is the log odds that a child will be stunted, wasted and/or underweight (run as three separate models). M*aternal characteristics* include mother's education, and employment status; paternal characteristics include father's education and employment status. H*ousehold characteristics* include the region within the country, urban/rural, and family wealth index. Adjusting for weight, cluster and stratification was done using the complex design command "svy" based on the Taylor Linearization method for adjusting standard errors.

Results

Table 1 shows the descriptive statistics split by maternal autonomy, measured as whether mother, father or both make decisions regarding mother's health. The table reveals that for child stunting, more than 80% of children are stunted irrespective of who makes decisions concerning maternal health. However, the highest rate of stunting is in households with lowest levels of maternal autonomy, i.e. where fathers make decisions on maternal health (87%), which is statistically significantly ($p \leq 0.05$) higher than those were mothers (83%) or both (81%) have decision making authority. Wasting is significantly higher where only fathers make these decisions (60%) than when both parents are involved in the decision-making process (57%) but no significant difference is observed between just mothers or just fathers' making decisions on maternal health. Similarly, more children who are underweight are found in households where fathers make decisions on maternal health (85%), while the least rate of underweight children are found in households where these decisions are jointly made (76%).

Generally, the education level of mothers shows a significant association with autonomy, with statistically significantly more fathers making the sole decision on maternal health when mothers have no formal education (56%) and are least involved when mothers have higher

education (5%). There is a statistically significant difference between decision making of mothers and fathers, relative to mother's employment, where more employed mothers (82%) make decisions on their own health, and fewer fathers (58%) make independent decisions on the health of employed mothers.

Further, a statistically significant difference between mother's and father's decision-making on maternal health is evident across the different levels of father's education, with the exception of primary education. More decisions are jointly made (50%) or made by mothers alone (45%) when fathers have at least secondary education, while uneducated fathers (43%) dominate decision-making when fathers decide on maternal health. Slightly, more decisions on maternal health are jointly made when fathers are employed (99%) but a high number of employed fathers (96%) still make these decisions alone.

In terms of household characteristics, decision making on maternal health declines as household wealth decreases, while mothers' decision-making increases as household wealth increases. In terms of religion, in households where Islam is practised, 76% of decisions on mother's health are made by fathers, while fathers are less involved in the decision-making process in other religions. For the demographic variables, place of residence shows that fathers in rural areas (68%) make more decisions on mother's health than fathers in urban areas (32%), while more mothers make decisions on their own health in urban areas (61%) than in rural areas (39%), these differences were statistically significant ($p \leq 0.05$). Regionally, more fathers in the North dominated decision-making on maternal health than fathers in the South.

Table 2 shows descriptive statistics for the sample split by stunting. The table reveals that statistically significantly more children are stunted in households where fathers make decisions on maternal health (55.41%, $p \leq 0.05$) than in households where both parents make these

decisions (32.81%, p≤0.05). Stunting is more prevalent in children from households where mothers are uneducated (41.29%, p≤0.05), while stunting is least observed in children whose mothers have higher education (8.33%, p≤0.05). In households where mothers are employed, more children are not stunted (72.86%, p≤0.05), when compared to children who are stunted (69.32, p≤0.05). Further, when fathers have higher education fewer children are stunted (15.34%, p≤0.05) than when fathers are uneducated (31.80%, p≤0.05). Children in richer households are less stunted than children in poorer households, with a wider disparity in the "not stunted" group than in the "stunted" group. More children from Muslim households are stunted (59.23, p≤0.05), while more Other Christians are not stunted (45.44%, p≤0.05). Geographically, more children in rural areas are stunted (58.13%, p≤0.05), while more children are stunted in the North West Region (31.67%, p≤0.05), than any other region.

Table 3 presents the descriptive statistics for the distribution of children by wasting and socioeconomic variables. In households where decisions are made by fathers alone, children are almost twice wasted than in households where these decisions are jointly made by parents. The prevalence of wasting is statistically significantly higher in children whose mothers are uneducated (40.35, p≤0.05), but no significant difference is observed for both groups when mothers are employed, with similar outcomes are observed for uneducated and unemployed fathers as well. Except for children in the poorest households, there was no statistically significant difference between children in the "not stunted group" and those in the "stunted group". However, a statistically significantly higher proportion of children from Muslim households are wasted (58.21%, p≤0.05) compared to children from Catholic and Other Christian households (9.60%, p≤0.05 & 32.19%, p≤0.05, respectively). In terms of household

location, no statistically significant difference is observed between both groups and the same is observed in the North West region, which has the highest proportion of wasted children (29%).

Table 4 provides the distribution of children by underweight and parental and household variables. The table shows that in households where fathers make maternal health decisions, a statistically higher proportion of children are underweight (58.05%, $p \leq 0.05$) when compared to households where both parents are involved in the decision-making process (32.05%, $p \leq 0.05$). For mothers' education, underweight is highest when mothers are uneducated (42.59, $p \leq 0.05$) and lowest when mothers are highly educated (8.21%, $p \leq 0.05$). In households where mothers are employed, more children are not underweight (72.30%, $p \leq 0.05$) than underweight (69.73%, $p \leq 0.05$). Regarding fathers education and employment, similar patterns to mothers are observed where educated fathers have a lower proportion of underweight children (14.72, $p \leq 0.05$) compared to uneducated fathers (32.85%, $p \leq 0.05$) and where employed fathers have slightly more children not underweight (97.11%) than underweight (96.8%), though there is no statistically significant difference between both groups. Although the poorest households have the lowest proportion of not underweight children (10.81%, $p \leq 0.05$), it is the middle households that have the slightly highest proportion of children that are underweight (21.33%, $p \leq 0.05$). For religion, more children from Muslim households are underweight (37.49% $p \leq 0.05$) than children from Catholic and Other Christians households ($p \leq 0.05$). The rural areas and the North West region have the highest proportions of underweight children (58.85%, $p \leq 0.05$ & 41.15%, $p \leq 0.05$), respectively.

Table 5 presents the multinomial logistic regression of maternal and paternal socioeconomic and demographic variables predicting fathers control of decision making versus both maternal control and joint control. These results indicate that what predicts a woman, rather

than a husband, having sole decision-making authority over her health, is whether she is employed or lives in an urban area, in the southern regions of the country. Specifically, employed women have an odds 2.5 times higher than unemployed women of being fully in charge of their health care decisions, which is significant at the $p<0.001$ level. Similarly, women in urban areas are 1.7 times more likely to make their own decisions about health care than are women in rural areas ($p<0.001$).

When comparing predicted likelihoods of joint decision-making versus paternal decision-making, however, more factors come into play. The result shows that compared to mothers with no education, mothers with secondary education are 35% ($p\leq0.05$) more likely and mothers with higher education are 90% more likely ($p\leq0.001$) to have their health care decisions made jointly than by just their husband. Employed mothers are 148% ($p\leq0.001$) more likely than unemployed mothers to be the sole decision-maker versus having their husband be the sole decision-maker for her health. Paternal education and employment status showed no association with maternal autonomy, either when decisions were made by mothers alone or jointly.

For household-related factors, Table 5 shows that wealth and religion are significantly associated only with differences between joint or father only decision making (not mother vs. father only decision making). Specifically, higher levels of wealth are associated with higher odds of joint decision making over father only decision making. Household religious practices played a statistically significant role in predicting maternal autonomy only when decisions are jointly made, as 50% ($p\leq0.001$) of women in Muslim households are less likely to jointly make decisions compared to women from Catholic households, relative to men. There are no significant differences between Catholics and other Christians, however.

Finally, we see that living in an urban area increases the odds of a mother making her own health care decisions (versus her husband making them) by 67% ($p \leq 0.001$). We also see lower odds of full maternal autonomy in the North East than North Central region, no significant difference between the North West and North Central region, and much higher odds of maternal autonomy (versus paternal power) in the southern regions than in the North Central region. Comparing joint to father only decision making the results are similar in the Southern regions have higher odds of joint decision making, but there is a significantly lower likelihood of joint versus father decision making in the Northwest compared to North Central and no significant difference between the North East and North Central regions.

Overall, these results suggest that there are higher odds of mothers having sole or joint authority for her own decision-making where she has more education, is employed, comes from a wealthier household, is not Muslim, and resides in an urban area or a Southern region of Nigeria. Father's education and employment have no significant relationship with maternal autonomy.

Table 6 presents the result of the logistic regression analysis predicting the odds a child met the criteria for stunting. On its own, maternal autonomy shows an association with child stunting, where children under-five are 46% ($p \leq 0.001$) more likely to be stunted when fathers alone make decisions on maternal health. However, when controlling for individual and household-related variables, this relationship shifts to non-significance. More important for stunting is maternal and paternal education, wealth, religion, urbanicity, and region. Specifically, children with the most highly educated mothers are 33% ($p \leq 0.05$) less likely to be stunted than children whose mothers have no education. On the other hand, children with fathers who had primary education are 48% ($p \leq 0.01$) more likely to be stunted than children whose fathers have no education. The regression

analysis further predicts that children from households in the richest quintile are 48% ($p \leq 0.001$) less likely to be stunted than children in the poorest quintile. In terms of religion, children from Muslim households are 79% ($p \leq 0.001$) more likely to be stunted than children from Catholic homes. Further, stunted children are 16% ($p \leq 0.05$) less likely to be found living in urban areas than in rural areas. By regional classification, children in the North-East, North-West and South-West regions are 50% ($p \leq 0.01$), 117% ($p \leq 0.001$) and 58% ($p \leq 0.001$) more likely to be stunted than children in the North Central region, respectively. There are no significant differences between the South East and South South regions and the North Central region in terms of stunting. There is also no significant association between stunting and maternal autonomy, or mother's or fathers' employment status.

Table 7 presents the logistic regression results predicting wasting in children under-five. Unlike stunting, wasting shows no significant association with maternal autonomy either by itself or when controlling for parental and household characteristics variables. Further, this model only found significant associations between wasting and wealth index and region. And the relationship with wealth is weak, as the only significant difference is that poorer children have an odds of 16% less than the poorest children of meeting criteria for wasting, which is significant at the $p \leq 0.05$ level. None of the higher levels of wealth was found to be significantly different from the poorest households in terms of wasting. As for region of residence, we find that children who lived in the North East, South-South and South-West regions were 31% ($p \leq 0.05$), (38%) ($p \leq 0.01$) and 41% ($p \leq 0.001$), respectively, more likely to be wasted than children in the North Central region.

Finally, the results of the logistic regression analysis predicting underweight in under-five children are shown in Table 8. Again, we see in the base model that children whose fathers make

decisions on maternal health are 49% ($p \leq 0.001$) more likely to be underweight than children whose mothers are autonomous, but that this result moves to non-significance when controlling for the explanatory variables. Where mothers are educated beyond secondary education, children are 26% ($p \leq 0.05$) less likely to be underweight, compared to mothers with no education. Similar to the results predicting stunting, children whose fathers have at least primary education have a predicted odds of being underweight that is 37% ($p \leq 0.05$) higher than children of uneducated fathers, controlling for the other factors. Though neither maternal nor paternal employment status is significantly associated with underweight, wealth does decrease the odds that a child will be underweight. Specifically, children in richer and richest households are 25% ($p \leq 0.05$) and 43% ($p \leq 0.001$), respectively, less likely to be underweight than children in the poorest households. In households where Islam is practised, children are 78% ($p \leq 0.001$) more likely to be underweight than children in Catholic households. Place of residence significantly predicts underweight in children, as children in urban areas fare better than children in rural areas, having a 14% ($p \leq 0.001$) lower odds of being underweight than rural children. Children from all regions except the South East region showed significantly higher odds of being underweight than the children in the North Central region. However, the largest gaps were between children in the North Central reference category, and the North East and North West regions, as predicted.

Discussion

In this study, we assess three different theories – absolute resource theory, relative resource theory and the gender theory – to predict maternal autonomy and child health in Nigeria. Generally, we find that absolute resources and gender theories best explains child health outcomes in Nigeria, with little support for relative resource theory. Specifically, the results indicate that high levels of maternal education and household wealth are associated with lower

odds of stunting and underweight, but not wasting. Further, father's resources such as education and employment have little impact except for the somewhat curious finding that fathers with primary education have higher rates of stunting and underweight than do fathers with no education. Islam, living in a rural area, and being in the NE or NW (rather than North Central) regions are associated with higher rates of stunting, wasting, and underweight. The results of our analysis show some support for absolute resources theory, no support for relative resource theory, and strong support for gender theory.

Absolute resources theory suggests that wealth and material resources are what leads to better health outcomes for children and is supported in this study. Our findings suggest that households who are wealthier are less likely to have children who meet the criteria for stunting, wasting, and underweight, although gaps differ by health variable. Stunting and underweight show significant advantages for the richer and richest households relative to the poorest, whereas for wasting the gap is between poorer and poorest households. In all three cases, the poorest children have significantly higher odds of experiencing ill health. Though we cannot identify the mechanism for the wealth benefit precisely from our models, based on the literature, we would assume that the benefits come from their greater financial ability to access to adequate and nutritious food, proper health care when sick and to maintain a proper hygienic environment, given that the effect is significant when controlling for structural factors like region or rurality.

Regarding the effect of individual resources on child health, we find support for hypothesis H1a, that higher levels of maternal education, decrease the odds of a child having stunting or underweight, but is not associated with wasting. This indicates that there is a unique effect of education for stunting and underweight, not accounted for by income or the other control

variables, but that the relationship between education and wasting shown in the literature may be due to the other factors included in the models.

Contrary to this outcome for women, the results for men's education and employment do not support the absolute resource hypothesis, as neither sets of variables are significant predictors of child health outcomes. Whether this null finding is because fathers spend more time working outside the home and less time with primary caregiving or something else, we cannot say. However, with the findings suggesting that household wealth is a significant predictor of child health outcomes, fathers' education and employment may be indirectly impacting child health through their financial contributions to the household, though the findings cannot tell us which of the parents is contributing most to the overall household wealth. Nonetheless, given these results, we reject the null hypothesis for H1a, accepting that access to resources improves child health, but only for household wealth and maternal education.

Having established that household wealth is significantly related to the increase or decrease in quality of child health, further arguments of absolute resource theory indicate that children who live in households found in areas where there are higher levels of poverty are more likely to have worse health outcomes. Hence, our findings suggest that children who live in urban areas are less likely to experience poor health outcomes than children in rural areas. This finding reinforces the understanding of the concentration of the poor in less developed and potentially vulnerable areas and the negative impact of poverty on not just the household standard of living but also on long-term child health.

Having considered the role of overall household and parental resources on child health outcomes, we look to examine the resource distribution among parents which defines the amount of bargaining power wielded by both parents and its subsequent influence on child health

outcomes. We hypothesized that if relative resources are what matters, we would see that maternal autonomy would increase with maternal education and employment, which would, in turn, reduce ill child health. In other words, the more power mothers possess, the better the child health outcomes. Findings do support hypotheses H2a that education and employment increase maternal autonomy and H2b that maternal autonomy is associated with better health at the aggregate level. However, when controlling for other factors, maternal autonomy does not remain a significant predictor of child health. The reader should keep in mind that there may be socio-anthropological factors not captured in this study such as marriage dynamics and household composition, that may alter this finding but considering the theoretical context and brevity of the current study, these factors were not added to the model.

The null findings for relative resources suggest support for gender theory, however. Gender theory argues that an increase in maternal resources does not change household power dynamics because gender roles are pre-determined in patriarchal societies, traditionally allocating more power to men. Thus, this theory predicts that even if there were an association between maternal autonomy and child health outcomes, maternal access to education or employment would not necessarily increase maternal autonomy so much as to remove patriarchal structures endowing men with more power. As such, given the evidence that mothers are more likely to ensure better health outcomes for children (Nyqvist & Jayachandran, 2017), this theory would predict worse health outcomes in contexts defined by high levels of patriarchal social organization.

The findings of this study confirm the hypotheses of this perspective. Although maternal employment and higher education for mothers increase maternal autonomy, fathers' education and employment have no impact on maternal autonomy. This suggests that resources only matter for women, but that men gain no greater authority from higher individual resources. Further, this

theory takes the household power dynamic beyond the household level to the larger societal level from where ideologies are formed and normalized. At this level, and as earlier highlighted, it is expected that in areas where greater levels of patriarchy exist there will be lower levels of autonomy. This expectation is confirmed by the results of this study, where mothers in urban areas are more likely to be autonomous than mothers in rural areas. Although these regions have poorer households which have been found to inhibit maternal autonomy, the gender theory holds that maternal autonomy will remain low even with higher access to resources for women because of the long-standing and deep-rooted patriarchal nature of such regions. This is precisely in line with our findings that Islam and living in a rural area or the North East or North West regions all reduce maternal autonomy, even after controlling for household wealth and paternal and maternal education and employment.

Additionally, gender theory would further suggest that patriarchy would be a more powerful determinant of outcomes than individual or household resources, given the evidence that mothers make better health care decisions for children (Nyqvist & Jayachandran, 2017). There is mixed evidence for this hypothesis. As noted above, there is some evidence that paternal and maternal education are associated with better child health, but neither maternal nor paternal employment is associated with child health outcomes. This may be due to a strong correlation between education, employment, and wealth, that attenuates the relationship between each individual item and the child health variables. Nonetheless, given the strongly significant and consistent finding that Islam, rurality, and North East and North West regions increase the likelihood of stunting, wasting, and underweight, there is greater support for the hypotheses H3b and H3c. Suggesting a relationship between patriarchal social structures and poor child health.

Conclusion

In this study, I have considered three theories – the absolute resource theory, the relative resource theory and gender theory – to explain stunting, wasting, and underweight among Nigerian children under the age of 5. Overall, these results suggest the most support for gender theory in that measures of patriarchal contexts are the strongest and most consistent predictors of the three health outcomes. However, there is also some support for absolute resource theory in that compared to the poorest families, higher wealth decreases the odds that a child will meet criteria for stunting, wasting, or underweight. Although maternal education and employment do increase maternal autonomy, given that paternal education and employment are not correlated with decision making, we do not see convincing evidence of relative resource theory. The strength of relative resource theory is further challenged by the evidence that maternal autonomy is not significantly associated with child health outcomes, controlling for resources and patriarchal context.

However, this is not to suggest that gender inequality is acceptable but rather to suggest that shifting the focus from enhancing individual women's statuses to structural problems like poverty, violence, or an inadequate public infrastructure would likely lead to better overall outcomes. In other words, empowering women cannot be achieved within a context of extreme inequality and overall exploitation.

Children need adequate nutritious food, good health care when sick, immunization against diseases, as well as clean and hygienic environment to prevent poor health outcomes, but when parents have limited access to the resources required to provide these basic necessities, children become vulnerable to poor health conditions. In other words, household poverty is harmful to child survival, no matter who makes decisions. Thus, the finding that increased household wealth

leads to better child health outcomes reveals an urgent need to lift citizens out of poverty, create jobs and eagerly pursue wealth-creation ventures, as it is likely to lead to a healthy population (beginning with the children).

Importantly, one could suggest that the items measuring patriarchal context are actually predictors of the impact of public infrastructure, especially rurality and region. This may be true and there is likely a need for reducing regional economic inequalities that goes beyond addressing patriarchy. As shown in this study, children are likely to suffer from malnutrition in rural than in urban areas, irrespective of maternal autonomy, parental education, or household wealth or religion. Therefore, hospitals, potable water, sewage and drainage systems, better access roads, electricity, to mention a few, could likely be basic requirements for these areas to improve the general well-being and health of children and parents in households. Urbanization will also create better economic opportunities for women to gain exposure to modern society and increase their access to material resources which has proved significant in improving maternal autonomy and child health outcomes. Further, adequate infrastructure in these areas may also reduce the vulnerability of such communities to the outbreak of pests and diseases, which may be detrimental not only to child health outcomes but to the entire population. Thus, truly disentangling the economic from the patriarchal causes may be both impossible and unnecessary.

Though these results suggest that greater attention should be given to structural rather than individual solutions, they also show that increased maternal education level is found to yield better health outcomes for children and improve the decision-making ability of mothers in the household. Hence, it is pertinent that the government increase investments in and access to education, leading to not just the expansion of Nigeria’s human capital base, but also to greater gender equality which would, in turn, contribute to the decline of malnutrition in the country.

Policies need to focus on providing access to quality education for the poor and the rich, irrespective of place of residence (rural/urban), as this increased educational levels will likely lead to improved work skills, knowledge and attitudes which could create better economic opportunities for parents and better health outcomes for children.

For the North-East and North-West regions where malnutrition is high, the government needs to accelerate poverty alleviation and safety net programmes (geared towards improving economic capacity) for the vulnerable population and restore peace, which could spark an economic revival in these regions, leading to better child health outcomes.

Theoretically, this study findings challenge relative resource theory, as I found that although resources such as income and education increase maternal autonomy, there is no indication that these resources will eventually lead to a balance of power among couples, especially in areas where patriarchy has been normalized and passed down from generation to generation. For example, in Northern Nigeria, we observe that regardless of income and education mothers have less autonomy than North Central and Southern Nigeria, suggesting a culture of male dominance prevalent in this region. Hence, Blood and Wolfe (1960) did not recognize that in areas where culture is strongly influenced by religion and religious practices (e.g. Northern Nigeria), modernization is unlikely to change patterns of behaviour, thus, we will continue to see male dominance in such societies.

Focusing on the gender theory, I suggest that although the gender roles and ideologies are crafted by society and may have an influence on household power dynamics, a focus on individual women behaviour and roles within the household may be less important than addressing the larger societal structural problems including access to resources and the inherently patriarchal nature of the country. Hence, gender theorists should focus not just on the gender

roles at the household level but also on economic challenges which are likely to influence gender inequality at the societal level.

A limitation of this study is that only one dimension of maternal autonomy was considered, and this was done based on the positive associations observed between stunting and maternal health decision-making found in the literature. However, future studies can consider other forms of autonomy that may affect child health outcomes, such as the experience of domestic violence, freedom of mobility and association and financial autonomy. The limitation of the NDHS data to provide variables to investigate who makes decisions on child health, making it impossible to measure the effect of childcare provided by either or both parents on child health outcomes, as it remains unclear which parent(s) makes the best decisions regarding child health. Further, the data also provides no measure of what might help explain the observed outcomes for the prevalence of patriarchy and poverty at the regional level.

In conclusion, this paper looks beyond the individual and household level to the larger societal structure shaping child health outcomes in Nigeria, with the absolute resource theory and gender theory explaining how male-dominance and higher poverty levels are detrimental to child health outcomes. Through the lens of these theories, the results have shown that power, gender and poverty remain major challenges to child health outcomes in Nigeria.

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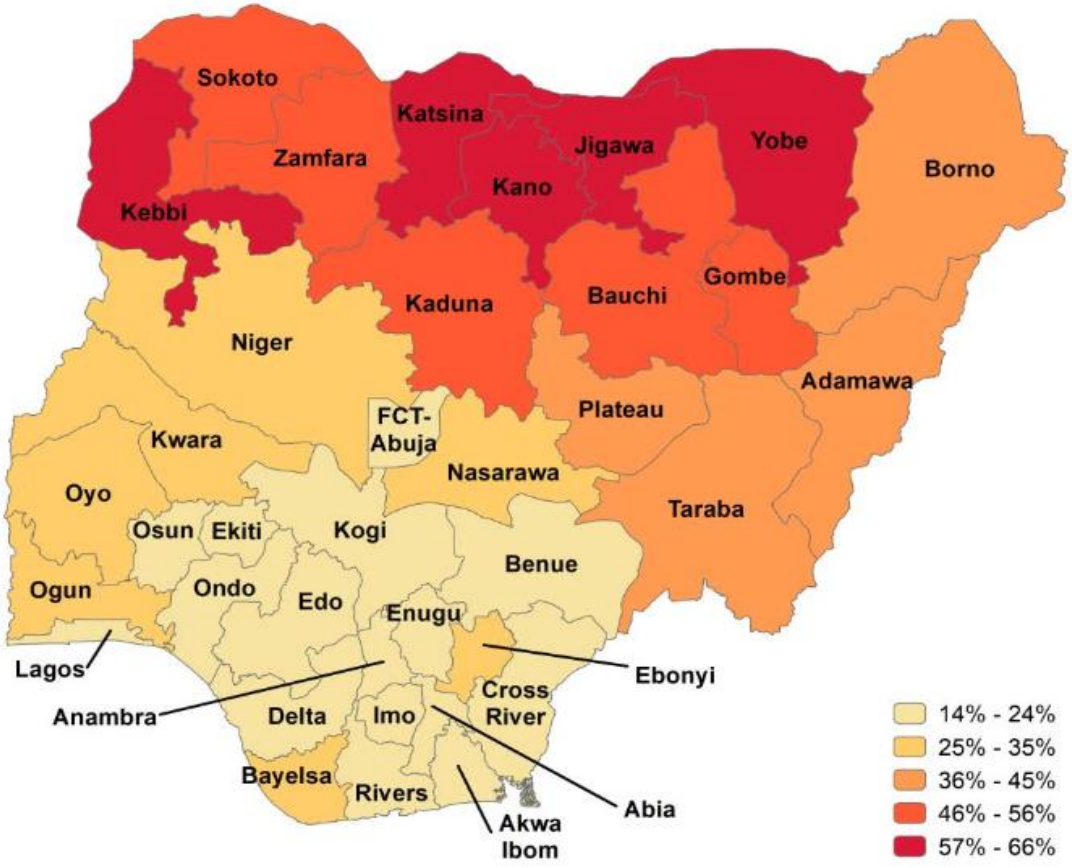
Figure 1: Map of Nigeria showing Percentage Distribution of Stunting by State



(National Population Commission (Nigeria) & ICF International, 2019)

Table 1. Descriptive Statistics by Decision Making on Mother's Health

	Mother (%)	Father (%)	Both (%)
Child Meets criteria for:			
Stunting	82.67[a]	87.47[c]	80.92
Wasting	58.27	59.95[c]	57.05
Underweight	79.28[a]	85.03[c]	76.36
Mother's Education			
No Education	24.86[ab]	56.40[c]	17.61
Primary	16.71	15.10	16.29
Secondary	43.95[a]	23.50[c]	49.11
Higher	14.48[a]	5.00[c]	16.99
Mother's Employment status			
Employed	82.28[a]	58.03[c]	84.85
Father's Education			
No Education	18.73[ab]	43.46[c]	12.88
Primary	15.38	13.44	15.35
Secondary	44.70[a]	30.55[c]	50.09
Higher	21.19[a]	12.55[c]	21.68
Father's Employment Status			
Employed	97.97	95.64[c]	98.61
Wealth Index			
Poorest	12.75[ab]	26.62[c]	7.78
Poorer	14.81[a]	24.77[c]	12.26
Middle	17.95	21.66	19.49
Richer	22.45[a]	15.99[c]	28.64
Richest	32.04[a]	10.96[c]	31.83
Mother's Religion			
Catholic	10.36[ab]	5.69[c]	16.54
Other Christians	45.79[a]	18.56[c]	51.29
Islam	43.86[ab]	75.75[c]	32.17
Place of Residence			
Rural	39.35[a]	67.55[c]	52.71
Urban	60.65[a]	32.45[c]	57.29
Region			
North Central	17.94	15.57[c]	11.73
North East	7.42[ab]	21.14[c]	10.57
North West	23.71[ab]	43.85[c]	10.01
South East	16.15[ab]	5.29[c]	24.66
South South	14.61[a]	5.18[c]	15.61
South West	20.17[a]	8.96[c]	27.42
N	1,141	6,243	3,827

[a]: Difference between mother and father statistically significant at p≤0.05 level

[b]: Difference between mother and both statistically significant at p≤0.05 level

[c]: Difference between father and both statistically significant at p≤0.05 level

Table 2. Descriptive Statistics by Stunting

	Not Stunted (%)	Stunted (%)
Decision on Mother's health care		
Mother	11.62	9.99
Both	42.92[a]	32.81
Father	45.46[a]	55.41
Mother's Education		
No Education	23.90[a]	41.29
Primary	13.32[a]	16.57
Secondary	43.77[a]	33.81
Higher	19.01[a]	8.33
Mother's Employment status		
Employed	72.86[a]	69.32
Father's Education		
No Education	19.36[a]	31.80
Primary	10.40[a]	15.14
Secondary	46.56[a]	37.72
Higher	23.68[a]	15.34
Father's Employment Status		
Employed	97.01	96.88
Wealth Index		
Poorest	11.95[a]	19.41
Poorer	12.10[a]	20.92
Middle	17.14[a]	21.54
Richer	23.65[a]	20.82
Richest	35.16[a]	17.31
Religion		
Catholic	17.23[a]	8.99
Other Christians	45.44[a]	31.78
Islam	37.33[a]	59.23
Place of Residence		
Rural	42.92[a]	58.13
Urban	57.08[a]	41.87
Region		
North Central	17.75[a]	13.43
North East	10.87[a]	16.13
North West	14.99[a]	31.67
South East	21.47[a]	11.69
South South	14.43[a]	9.76
South West	20.48[a]	17.32
N	1,739	9,667

[a]: Difference between not stunted and stunted statistically significant at $p \leq 0.05$ level

Table 3. Descriptive Statistics by Wasting

	Not Wasted (%)	Wasted (%)
Decision on Mother's health care		
Mother	10.33	10.12
Both	35.69[a]	33.23
Father	53.97[a]	56.65
Mother's Education		
No Education	36.69[a]	40.35
Primary	16.97	15.47
Secondary	36.24	34.41
Higher	10.10	9.76
Mother's Employment status		
Employed	69.70	69.78
Father's Education		
No Education	27.93[a]	31.50
Primary	14.29	14.57
Secondary	40.29	38.00
Higher	17.49	15.94
Father's Employment Status		
Employed	97.02	96.80
Wealth Index		
Poorest	16.24[a]	19.82
Poorer	20.53	19.02
Middle	21.25	20.64
Richer	21.86	20.68
Richest	20.12	19.84
Religion		
Catholic	11.08[a]	9.60
Other Christians	35.89[a]	32.19
Islam	53.02[a]	58.21
Place of Residence		
Rural	55.47	56.25
Urban	44.53	43.75
Region		
North Central	15.76[a]	12.89
North East	13.84[a]	16.48
North West	28.62	29.76
South East	14.43[a]	12.23
South South	10.61	10.25
South West	16.73	18.40
N	4,733	6,724

[a]: Difference between not wasted and wasted statistically significant at $p \leq 0.05$ level

Table 4. Descriptive Statistics by Underweight

	Not Underweight (%)	Underweight (%)
Decision on Mother's health care		
Mother	11.39	9.90
Both	43.66[a]	32.05
Father	44.95[a]	58.05
Mother's Education		
No Education	22.84[a]	42.59
Primary	14.62	16.38
Secondary	45.39[a]	32.82
Higher	17.16[a]	8.21
Mother's Employment status		
Employed	72.30[a]	69.73
Father's Education		
No Education	18.36[a]	32.85
Primary	11.31[a]	15.09
Secondary	45.86[a]	37.34
Higher	24.47[a]	14.72
Father's Employment Status		
Employed	97.11	96.8
Wealth Index		
Poorest	10.81[a]	20.21
Poorer	13.33[a]	21.05
Middle	18.86[a]	21.33
Richer	25.18[a]	20.23
Richest	31.82[a]	17.18
Religion		
Catholic	17.21[a]	8.58
Other Christians	45.30[a]	31.04
Islam	37.49[a]	60.38
Place of Residence		
Rural	43.59[a]	58.85
Urban	56.41[a]	41.15
Region		
North Central	17.73[a]	13.18
North East	10.51[a]	16.54
North West	15.63[a]	32.49
South East	22.00[a]	11.07
South South	13.52[a]	9.70
South West	20.61[a]	17.02
N	2,139	9,361

[a]: Difference between not wasted and wasted statistically significant at $p \leq 0.05$ level

Table 5. Multinomial Logistic Regression Results Predicting Autonomy (Fathers as base outcome)

	Mother		Both	
	Odd Ratio	**Std Err.**	**Odd Ratio**	**Std Err.**
Mother's Education				
No Education (ref)				
Primary	0.992	0.209	1.127	0.144
Secondary	1.148	0.224	1.351*	0.175
Higher	1.377	0.385	1.906***	0.378
Mother's Employment status				
Unemployed (ref)				
Employed	2.478***	0.347	2.895***	0.300
Father's Education				
No Education (ref)				
Primary	1.206	0.243	1.121	0.151
Secondary	0.998	0.211	1.033	0.132
Higher	1.134	0.251	1.095	0.188
Father's Employment Status				
Unemployed (ref)				
Employed	1.314	0.542	1.578	0.385
Wealth Index				
Poorest (ref)				
Poorer	0.907	0.179	1.331*	0.172
Middle	0.728	0.148	1.408*	0.207
Richer	0.830	0.181	2.096***	0.324
Richest	1.157	0.269	2.441***	0.432
Religion				
Catholics (ref)				
Other Christians	1.113	0.225	1.925	0.130
Islam	0.805	0.237	0.496***	0.087
Place of Residence				
Rural (ref)				
Urban	1.669***	0.266	0.980	0.098
Region				
North Central (ref)				
North East	0.236***	0.060	1.175	0.169
North West	0.951	0.189	0.597**	0.106
South East	2.177***	0.511	3.443***	0.547
South South	3.556***	0.814	2.489***	0.412
South West	2.684***	0.571	2.525***	0.369

*** p<0.001, ** p<0.01, *p<0.05

Table 6. Logistic Regression Results Predicting Stunting

	Odds Ratio	Std Err.	Odds Ratio.	Std Err.
Decision on Mother's health care				
Mother (ref)				
Both	0.889	0.102	1.044	0.128
Father	1.464***	0.158	0.980	0.116
Mother's Education				
No Education (ref)				
Primary			1.012	0.130
Secondary			0.981	0.125
Higher			0.673*	0.106
Mother's Employment status				
Unemployed (ref)				
Employed			1.040	0.078
Father's Education				
No Education (ref)				
Primary			1.483**	0.203
Secondary			1.116	0.129
Higher			1.143	0.155
Father's Employment Status				
Unemployed (ref)				
Employed			1.252	0.197
Wealth Index				
Poorest (ref)				
Poorer			1.142	0.152
Middle			0.986	0.130
Richer			0.805	0.109
Richest			0.523***	0.078
Religion				
Catholics (ref)				
Other Christians			1.186	0.130
Islam			1.794***	0.255
Place of Residence				
Rural (ref)				
Urban			0.843*	0.068
Region				
North Central (ref)				
North East			1.497**	0.200
North West			2.169***	0.304
South East			1.073	0.146
South South			1.270	0.179
South West			1.576***	0.203

*** p<0.001, ** p<0.01, *p<0.05

Table 7. Logistic Regression Results Predicting Wasting

	Odds Ratio	Std Err.	Odds Ratio	Std Err.
Decision on Mother's health care				
Mother (ref)				
Both	0.951	0.961	0.980	0.101
Father	1.072	0.104	1.076	0.109
Mother's Education				
No Education (ref)				
Primary			0.893	0.078
Secondary			1.013	0.088
Higher			1.039	0.132
Mother's Employment status				
Unemployed (ref)				
Employed			1.061	0.063
Father's Education				
No Education (ref)				
Primary			1.027	0.085
Secondary			0.934	0.075
Higher			0.867	0.093
Father's Employment Status				
Unemployed (ref)				
Employed			0.942	0.125
Wealth Index				
Poorest (ref)				
Poorer			0.837*	0.067
Middle			0.857	0.075
Richer			0.851	0.095
Richest			0.877	0.110
Religion				
Catholics (ref)				
Other Christians			0.939	0.084
Islam			1.166	0.126
Place of Residence				
Rural (ref)				
Urban			1.031	0.069
Region				
North Central (ref)				
North East			1.312*	0.140
North West			1.113	0.103
South East			1.181	0.132
South South			1.377**	0.147
South West			1.411***	0.138

*** p<0.001, ** p<0.01, *p<0.05

Table 8. Logistic Regression Results Predicting Underweight

	Odds Ratio	Std Err.	Odds Ratio	Std Err.
Decision on Mother's health care				
Mother (ref)				
Both	0.844	0.102	0.986	0.120
Father	1.485***	0.168	1.007	0.115
Mother's Education				
No Education (ref)				
Primary			0.921	0.097
Secondary			0.881	0.092
Higher			0.737*	0.105
Mother's Employment status				
Unemployed (ref)				
Employed			1.116	0.082
Father's Education				
No Education (ref)				
Primary			1.369*	0.181
Secondary			1.065	0.115
Higher			0.854	0.110
Father's Employment Status				
Unemployed (ref)				
Employed			1.170	0.199
Wealth Index				
Poorest (ref)				
Poorer			1.016	0.113
Middle			0.864	0.109
Richer			0.753*	0.099
Richest			0.603***	0.088
Religion				
Catholics (ref)				
Christians			1.188	0.133
Islam			1.776***	0.236
Place of Residence				
Rural (ref)				
Urban			0.860*	0.065
Region				
North Central (ref)				
North East			1.582***	0.187
North West			2.046***	0.230
South East			1.000	0.117
South South			1.329*	0.161
South West			1.471***	0.156

*** p<0.001, ** p<0.01, *p<0.05