Ibadan Journal of Peace & Development
Vol. 8 No. 1 February 2018 pp. 152-172

Assessment of Residential Overcrowding and Associated Health Risk on the Girl-Child in Low-Income Communities in Oyo State, Nigeria

Taiwo, Patricia A[1], Adio-Moses Ruth Ochanya[2] and Taiwo, Y.M[3]

Abstract

The consequences of residential overcrowding on children in developing countries have attracted scholarly attentions with dearth of information on its health implications on the girl-child from large family sizes particularly among selected low-income communities in Akinyele local government area, Oyo state. This study adopted a descriptive and cross-sectional survey design using the epidemiological transition theory as framework for explanation. A structured questionnaire was administered on 450 purposively selected parents with large family sizes, while 9 in-depth interviews and 3 focus group discussions (FGDs) were conducted with parents and mothers respectively from 3 communities in the study area. Quantitative data were analyzed at the univariate and bivariate levels and presented using descriptive statistics of frequencies, percentages, and inferential statistics of chi-square, while qualitative data were content analyzed. Majority (86.3%) were females, 93.7% were married while only 16.1% had tertiary education. About 70.0% of the respondents had more than 4 children and earned ₦40,000 and less monthly. Nearly half (49.3%) of the respondents resided in one room self-contain apartment with their children. A significant association existed between gender of children and risk of communicable diseases ($X^{2=}$212.7, P=0.002). More female children experienced measles (55.7%) and always had cough (65.0%), than their male counterparts who experienced measles (45.4%) and always had cough (32.0%). The girl-child experienced sexual abuse, shame and inconvenience in maintaining personal hygiene because of other roommates of the opposite sex. There is need to educate and enlighten parents on the general implication of large family size, and specific health risk of overcrowding on the girl-child and she should be equipped with risk reduction skills as a coping mechanism. Government should also provide adequate housing for low-income and large families.

Key words: Low-income Communities, Health Risk Girl-Child, Large family sizes, Overcrowding

Introduction

Childhood exposure to overcrowding and poor living conditions continue to be a major public health problem that has implications relating to nutritional, physical and mental health problems at different phases of growth and later in adulthood. The girl child especially in low in-come communities are not only exposed to diseases through their living arrangement; they are also exposed to sexual violence at home and the community. Indeed, the wellbeing of any child can be traced to his/her physical environment, housing conditions, family size, nutritional in-take among other. In the same vein, the physical condition of the home can be determined when we look at physical size of the home and the number of people in it (Sharon and Elizabeth et al 2006; **Anyanwu and** Adio-Moses, **2008;** Onwuama, 2012). More often than expected, when the number of people in a home exceeds the capacity of the approved space, it is tantamount to overcrowding. WHO, (2018) defines household crowding is a condition where the number of occupants exceeds the capacity of the dwelling space available, whether measured as rooms, bedrooms or floor area, resulting in adverse physical and mental health outcomes (Gove, Hughes and Galle,1983; Evans, 2003).

Crowding is a result of a mismatch between the dwelling and the household. The level of crowding relates to the size and design of the dwelling, including the size of the rooms, and to the type, size and needs of the household, including any long-term visitors. Whether a household is "crowded" depends not only on the number of people sharing the dwelling, but on their age, their relationship and their sex. For example, a dwelling might be considered crowded if two adults share a bedroom, but not crowded if those adults are in a relationship (Eurostat. Glossary,2014; Wilson, 2014). Crowding is also referred to as individual's psychological reactions to density which can be as result of lack of privacy or high unwanted interactions. However, the standard measurement of crowding changes with ones socio economic status and societal expectations which makes it difficult to agree conclusively the standard for measuring crowding (Myer 1996, Alison 2001). The effect of crowding is broadly related to hazards and risk related with insufficient space within the house for living, sleeping and domestic activities. Crowding is considered to be stressful to health and well-being across different cultures and aspects among low, middle and high-income populations. Studies (Baker, Michael, Dillip, Kamaleshl, and Howden 2008; Anyanwu and Adio-Moses, 2008; Popoola, Tawose, Abatan, Adeleye, Jiyah, Nihinlola, 2015; Ojo and Olaniran, 2017, Adio-Moses, 2016) have reported a direct link between crowding and adverse health

consequences, such as infectious disease and other health problems. Taiwo and Ajayi, (2013) have also attributed the increased environmental pollution in urban markets to overcrowding. In addition, researchers (Adekunle, Godson and Muideen, 2015) have connected the effect of housing quality on the health of children. The effect of crowding on children based on age group has been studied (Alison, 2001) but there has not been a distinction with which age group and gender suffers more and why.

Living in over crowded house expose children to certain health risk such as measles, chicken pox, and tuberculosis because of the facilities they will have to share. This has implication for child's survival (ODPM 2004, Retherford 2007). The hazard is more for the girl-child considering the fact that she requires more space and personal hygiene due to her physiological make up Other causes of children illness includes the child's age, quality and quantity of water, availability of toilet facilities, feeding practices, environmental conditions (Woldmeicael 2001, Onyeaso, 2004).

The relationship between respiratory problems and overcrowding has been well established overtime. Activities such as talking, sneezing and coughing could contribute to increased levels of some matter which could exacerbate respiratory responses and aggravate the health conditions of asthmatic patients. Also, overcrowding has been reported to increase the effect of respiratory diseases risk among children (ODPM 2004; Adekunle, Godson and Muideen, 2015; Adekunle and Johnson et al 2017). Although, overcrowding by itself has been considered insufficient to affect a child's health as it is required to works alongside with some other factors such as parent socio-economic status, poverty and pollution. Children from low income communities tend to face more consequences of bad housing conditions and overcrowding as a result of financial status (Brooks- Gunn 1997; Child Trend 2000; Ojo and Olaniran, 2017). Factors that encourage overcrowding have been highlighted to include household size, living in extended families, lack of suitable housing stock, affordability issues and sexes of children. (Alison, 2001; Digby and Emily, 2017)

Children are vulnerable to some health hazards that can be induced by the home environment girl-child, particularly is vulnerable to hazards such as unintentional injuries as a result of the topography of their housing location and where they learn and grow because they drink more water, eat more food, breathe in more air than adults and their hand to mouth behavior magnify their exposure to these hazards since they play close to the ground. There are numerous vector borne diseases that affect children and

can lead to child mortality. One of this disease is malaria which is more prominent in the tropics like Nigeria and accounts for more than 800,000 deaths annually (Landrigan and Garg, 2005; Environmental protection agency, 2015).

In addition to that, crowded houses expose children to meningitis as revealed in a study in Australia (Baker et al 2000). Some mental problems are also caused by crowding leading to psychological problems for children and can later leads to child mortality (Evans, Saegert and Harris, 2001; ODPM, 2004). The girl-child is more vulnerable to rape and sexual abuse especially where individuals of different gender, share a room. Growing up as a girl requires a lot of sex education, privacy and personal hygiene. This is particularly important because the average girl-child matures quickly particularly in the development of her reproductive features such as the breast, hips and others which make her look attractive and sometimes older than her age even as a young teenager or a child. Such quick growth exposes them and makes them more vulnerable to physical, emotional and sexual abuse even among their siblings. Many girls from the ages of 6-8years begin to bud early, some start seeing their menstruation early. It therefore becomes disturbing for such girls to grow in homes where there are more than the required numbers of people, in terms of their ages, sexes and level of relationships in the house. It is against this background that many develop countries recommends a room per sex of a child in the home. Many studies have been carried out on the consequences of overcrowding on the health of children from large family but very few have This paper therefore focused on the health risk of overcrowding on the girl-child.

Theoretical framework; Epidemiological Transition Theory

The Epidemiological Transition theory focuses on the pattern of health and the distribution of diseases. Proposed by Abdel Omran in 1971, the theory examines connection demographic, economic, sociological factors, their attendant consequences and overcrowding. It emphasizes more on the population which is as a result of the influence of population biology and disease ecology has on it, examining the sociological component of this view. The cause of death and shift away from diverse chronic and infectious diseases between societies overtime despite its ambiguity is well explained by the theory of Epidemiological transition according to Mackenbach (1999). Mortality according to this theory is a fundamental factor in population dynamics which implied that mortality determines the changes in population. Thus, it concluded that the population is usually affected by increase in

children mortality. Children mortality differ across countries as it is higher developing countries than the developed ones Jones (2012), has once argued that decrease in death rate in developed countries is a product of result of improvement in health facilities and increase in the level of education. Young women and children are the most affected with changes in health and pattern of diseases at the epidemiologic transition. Women and children are the most vulnerable in the population which exposes children particularly the girl-child to hazards as a result of the transition. (Blake 2003). The shifts in health and disease patterns that determines the epidemiologic changes are linked with demographic and socio economic changes that made up the modernization complex (Omran 1971). Indeed, many obvious demographic and socioeconomic factors including psychological distress have been directly and indirectly related to child health and ill-health (Pepin et al 2018).

Research methodology

This research adopted a descriptive and cross sectional survey design. Data collection was both quantitative and qualitative method. The study location is Oyo state. It is mainly a Yoruba speaking area but can be described as a mix pot of cultures because it houses people with diverse dialects from other parts of the country and around the world. Oyo state consists of 33 local governments Areas. Akinyele local Government area was purposefully selected because of the low socioeconomic condition, cultural and poor health practices of the residents. The study population was made up of all the households in the three selected communities simple random sampling technique was used to select three (Ojoo, Moniya and Shasha) communities within Akinyele local government area Oyo state. While purposive sampling was used to select the respondents of the study which comprises of married men and women, mothers and fathers who have not less than 6 members in their household. Some who have less than four children, also have relatives residing with them. Families who reside in three bedroom flats or more were excluded from the study in order to have a precise criteria of overcrowded home as the selected respondents and samples. A structured questionnaire was administered to 450 parents with large family sizes and qualitative data was elicited using in-depth interviews conducted with 9 parents (2 mothers and a father) each from the 3 selected communities. Three Focus group discussions session were conducted with mothers of more than four children one each from the three communities. Quantitative data collected were imputed into the statistical package for the social sciences (SPSS) version 18.0. The data were coded and

analyzed at the univariate and bivariate levels and presented using frequencies, percentages and chi-square at the 95% level of significance. Qualitative data were content analyzed and presented in verbatim quotes. Below is a table summarizing the procedure for data collection.

Table 1: Summary of Data Collection

S/N	Data collection methods	Instrument for data collection	respondents	Moniya	Shasha	Ojoo	Total
1	Quantitative	Questionnaire	Parents (fathers and mothers)	150	150	150	450
2	Qualitative	In-depth interview guide	**Fathers**	1	1	1	3
			Mothers	2	2	2	6
							9
		Focus Group Discussions	Mothers	1	1	1	3

Results

Socio-Demographic Characteristics of Respondents

A total of four hundred and fifty respondents with an average age of 35 years participated in this study. Table 2 below shows the socio-economic characteristics of respondents from the study. (86.3%) of the respondents were females while (13.7%) were males. This can be as a result of socio cultural reasons as suggested by Jones 2005. The society has stated roles for women, for instance women are care caregivers, they should stay at home, or the men should go out to work, women are to be taken care of by the men, they are weaker vessels and others.

Table 2. Socio-economic Profile of Respondents (N=450)

Variables	Categories	Percentage (%)
Gender	Female	86.3
	Male	13.7
Marital status		
	Single	2.8
	Married	93.7
	Divorced	0.3
Age (in years)		
	Less than 18	3.0
	18-35	45.8
	36-55	51.2
Level of education		
	No formal education	12.6
	Primary	38.1
	Secondary	34.2
	Tertiary	16.1
Occupation	Trading	55.0
	Farming	25.0
	Civil servant	20.0
Monthly Income level	‹₦18,000	15.0
	₦18,000-₦30,000	30.0
	₦30,001-₦40,000	25.0
	₦40,001-₦50,000	20.0
	Above ₦50,000	10.0

Add up the percentages to ensure the figures are correct

Majority of the respondents (93.7%) were married while (2.8%) were single. Fifty-one percent of the respondents were within the age range of 36 to 55 years (Middle-aged adults), (45.8%) were within the age range of 18-35 years (young adults) while few (3.0) were from 56 years old and above (older adults). Well over a quarter 38.0% of the

respondents had primary education, (34.2%) had secondary school certificate while 16.1% had tertiary education. The level of respondents' education revealed that few respondents had tertiary education which can be due to social factors such as peer influence, family background, parental responsibility, personal abilities and respondents' academic performance. A large proportion of the respondents (70.0%) earned ₦40,000 and less on a monthly basis. This is not surprising as the occupation of the respondents should that over half (55.0%) of them were traders, while 25.0% were farmers.

Table 3: Socio-Demographic Characteristics of Respondents (N=450)

Variables	Categories	Percentage
Religion	Christianity	50.5
	Islam	48.2
Type of family	Monogamy	70.9
	Polygyny	29.1
Age at marriage	≤20	42.4
	Above 20	57.6
Number of children	≤4	30.6
	>4	69.4
Gender of children	Same gender	21.4
	Different gender	78.6
	All boys	8.0
	All girls	13.0
	More boys than girls	28.6
	More girls than boys	50.0
Residential Structure	One room face me I face you apartment	39.7
	One room self-contain	49.3

Two bedroom apartment	11.0

Majority (69.9%) of the respondents operate a monogamy type of family while 30.1% practiced polygyny where their husbands had more than one wife or some concubines outside. This may be due to the fact than nearly half (48.2%) were Muslims. Religion therefore played an important role in the marriage type and indeed the type of family system in the study areas. About (57.6%)) of the respondents were married at the age of 20 years or below while, (42.4%) married above 20 years. The Ghana population council 1996 gave early marriage as a reason for large family size and increase in the number of children., This contradicted the findings of this study as more than 50% of the respondents are married before the age 25 and more than 50% have less than three children. Although, the qualitative findings revealed that some respondents still wanted more children.

Table 4. Respondents' resident type, family type and no of children

No of Children and Family Type	Residential Structure		
	Face me I face apartment	Self-Contain	2 bedroom flat
Family with ≤ 4 children			
Parents Share a room with children	72.8	78.5	25.5
Parents do not share a room with children	37.2	22.5	65.5
Family with > 4 children			
Parents Share a room with children	65.3	49.3	45.7
Parents do not share a room with children	34.7	51.7	54.3
Family with ≤ 4 children			
Often experienced communicable diseases	55.7	53.5	51.5
Do not often experienced communicable diseases	44.3	46.5	48.5
Family with >4 children			
Often experienced communicable diseases	65.5	55.5	45.5
Do not often experienced communicable diseases	34.5	44.5	54.5

The effect of respondents' level of education had been revealed in early marriage. Since more women participated in the study, we can deduct from here that many women in Akinyele local government area were married and became mothers before they clocked 30years. A huge majority (nearly 70.0%) of the

respondents had more than 4 children. Respondents who had children of both sexes and same sex were 78.6% respectively. Respondents were however reluctant to tell how many children they had particularly because their religion did not permit them to count the number of children they have, neither were they willing to tell the number of the sexes of the children they had i.e how many female and how many males. Over a quarter (28.6%) of the respondents who had children of different sexes had more boys than girls, while half of them had more girls than boys. Nearly half (49.3%) of the respondents reside in a one- room self-contained apartment with their children, while nearly 39.7% stayed in one room apartment. Only 11.0 percent of the respondents stayed in two bedroom apartments. Considering the number of children and residential structure of the respondents from the study area, it is obvious that the respondents reside in an overcrowded area.

Effects of Overcrowding on a Child's Health

Density is often time used to measure crowding without cognizance to the individual perception of the situation (Gray 2001). The economic condition of respondents and housing pattern (mostly face me I face you) in this area has contributed to the number of persons (children inclusive) that share a room. Gray 2001, identified three measures that can be used to measure overcrowding, they are; occupancy rate, room occupancy and bedroom occupancy. Myers (1996) opined that a room is crowded when there are more than two persons in it irrespective of age or sex.

In order to access the effects of overcrowding on a Child's health, respondents were asked questions on the number of rooms available in the house and the number of persons that share a room. From table 3 above, respondents with four children or less who reside in face me I face you apartment and shared a room with their parents were 72.8%, while those with more than four children in similar residential structure, were 65.3%. Families with more than four children who shared a room with their children in a self – contain and two-bedroom flat were 49.3% and 45.7% respectively. These results therefore confirmed the fact that respondents do not only have a large family size, but also were crowded in their residence. Considering the ages of the respondents and age at marriage, many of the children of the respondents are still less than 18 years and therefore resided with their parents. It is therefore not surprising that although the experience of communicable diseases was reported by respondents in the study area irrespective of the residential structure, more families with more children in poorer residential types reported often experiencing communicable

diseases, than others. For instance, families with more than for children who resided in face me I face you apartment (65.5%), often experienced communicable diseases than those with less than four children (55.7%) as shown in the table above.

The above findings were supported by the reports from the in-depth interviews in which a mother emphatically expressed how they suffer from one communicable disease to another in their abode and expressed the cause to be due to lack of space thus:

> *…. the matter is indeed serious as hardly will any week pass in my house where we do not experience cough or catarrh. As one person is picking it, the other is collecting and distributing it to every member of the family. How can we not suffer always when we do not have breathing space in the house? That was how all of us came down with chicken pox that almost killed my only daughter two years ago…* **(Mother /shasha/39yrs/5children/self-contain/Muslim)**

The above response summarizes the effect and health implication of a crowded house on the family, particularly the girl-child who is considered to be tender and fragile especially when they are much younger.

Table 5 below revealed that families with more children have history of experiencing communicable diseases, physical and sexual abuse particularly among their female children than their male children. For instance, the female-children of families with more than four children have experienced communicable diseases more than the male-children. While over half of the female-children from families (55.7%) with four children or less have experienced chicken pox, over half of male-children (64.3%) from same family have never experienced chicken pox. Furthermore, majority (61.5%) of the female-children from families with more than 4 children experienced communicable diseases, while male-children from such families who experienced chicken pox were 41.5%. A significant association existed between the gender of children and the experience of communicable diseases and sexual abuse irrespective of the number of children in such house hold. For instance, the chi-square result ($X^{2=}$212.7, P=0.002) for families with four or less children revealed a significant association between the gender of the children and their experience of communicable diseases. For families with more than four children, the chi-square result ($X^{2=}$213.6, P=0.003) also revealed a significant association between gender and their experience of communicable disease. On the association between gender and the experience of sexual abuse, the result is similar. The chi- square result ($X^{2=}$123.4, P=0.003) for families with four of less childrenwas significant just as the result

($X^{2=}$103.4, P=0.023) for families with more than four children was significant. Thus, children from the two categories of families (with four or less than for children or more than for children), both males and females experienced communicable diseases and sexual abuse. Although, findings revealed that both male and female children of the family studied, were sexually abused at one point or another, sexual abuse was however reported to be experienced by more female children of both families than males. Female children from families with more than four children who were sexually abused (75.0%) were more than twice the number of males who were sexually abused in both families with four or less children and those with more than four children (35.0% respectively).

Table 5: Respondents family type and gender of children who experienced communicable disease and sexual abuse

No of Children and Family Type	Gender		X^2-(P-Value)
	Male	Female	
Family with ≤ 4 children	91.0	99.0	22.2 (0.23)
Family with › 4 children	95.0	98.0	45.3 (0.67)
Family with ≤ 4 children			
Children ever being sexually abused	34.0	68.0	123.4 (0.003)
Children never been sexually abuse	66.0	32.0	145.9 (0.076)
Family with ›4 children			
Children ever being sexually abused	35.0	75.0	103.6 (0.023)
Children never been sexually abuse	65.0	25.0	345.9 (0.234)
Family with ≤ 4 children			
Ever experienced communicable diseases like chicken pox	35.7	55.7	212.7 (0.002)
Never experienced communicable diseases chicken pox	64.3	44.3	340.5 (0.43)
Family with ›4 children			
Ever experienced communicable diseases like chicken pox	41.5	61.5	213.6 (0.003)
Never experienced communicable diseases chicken pox	49.5	38.5	124.2 (0.893)
Family with ≤ 4 children			
Communicable diseases experienced in the last 6 months			
Measles	45.4	55.7	
Cough	32.0	65.0	
Catarrh	58.0	60.0	
Chicken Pox	35.0	55.7	
Family with › 4 children			
Communicable diseases experienced in the last 6 months			
Measles	48.0	58.0	
Cough	75.0	72.5	
Catarrh	89.5	98.5	
Chicken Pox	50.0	38.5	

It was obvious that mothers in the qualitative studies were not willing to share the experience of sexual abuse by children particularly because of the sensitive nature of the issue or fear of stigmatization. To this end, several cases of rape known to mothers were unreported and settled at the family level to avoid public conflict. The agony of having a daughter who had been sexually abused was expressed by a mother who was courageous enough to open up thus:

> *My sister the incidence of child abuse here is very high, even rape cases, but many people will not want to talk because they don't want to wash their dirty linen outside or have people stigmatizing their children. Cases of daughters been raped by fathers, cousins and even brothers abound and they will just cover it at the family. Mine was sexually abused by the nephew who came on a visit and stayed with us for some months. It was disheartening. We had to send him away immediately and since then I can no longer trust anybody male around any of my children whether male or female. I guard my daughter around any man now like an angry mother hen* **(Mother/Ojo/49yrs/5children/self-contain/Christian)**

The above response does not only espouse the sexual implications of living in an overcrowded home but also the adverse effect of having an extended irresponsible family relations stay at a home with no space. The pain of a mother is also expressed and the experience of the girl-child cannot be over emphasized as this has extended to the mother and the challenge of trusting the opposite sex with her children. This also has implication on children's social interaction as well as their psychological development especially because it was not discussed that the girl in question was taking for psychological therapy after the incidence. Measures taking to solve the situation only revealed that the nephew was only asked to leave quietly. Thus familial relationship is the basis for ensuring peace and settling conflict resulting from child sexual abuse rather that the law. Attention is rarely paid to the implication this has for the psychological and emotional wellbeing of the girl-child

Most of the communicable diseases experienced by the children of these families include chicken pox, measles, catarrh, cough etc. however, the study revealed that these ailments were reported to be experienced by more girls than boys particularly in families that have four or less children. The experience of cough and catarrh which are mild and common communicable diseases are reported among more boys than girls in families with more than four children. Since more children live in face -me -I -face -you than flat or self-

contain, they are more at risk of contracting communicable diseases. In such housing, toilet facilities mostly pit is shared, although some respondents' reported that they do not use the toilet directly, such houses have corridors that harbor loads where rat and mosquito breeds thus, exposing the children to greater risks

The extended family living had not been totally eradicated as some respondents still have an additional relatives staying with them. Children in Akinyele Local government, are prone to communicable hazards like cough and measles. A female interviewee revealed the effects of overcrowding on her children;

> *"The illnesses common among my children are measles and cough. We share one room. They do not sleep on a mattress; they only sleep on the mats together."* **(IDI/Female/42 years/4 children/ SHAHSA/trader/ Muslim)**

Another interviewee revealed the prevalence of children exposure to overcrowding condition in the study although most of them are unaware of the risk they expose their children to;

> *"We all live in a room with my wife. I had the intention of marrying another wife but I currently do not have the financial capacity and space. I sleep on the same mattress with my wife and lay mats for the children to sleep on the floor"* ***(IDI/MALE/51years/5 children/Ojoo/Trader/Muslim)***

The above response also expresses the effect of religion and socio-economic status on having large family sizes where a Muslim father would have loved to have another wife but for lack of income and space. From the stated interviews and supported by quantitative findings, most respondents in these communities occupy one room and family members both nuclear and extended do share the single room. The communal system of family encourages overcrowding and further exposes the children to hazards. Family members believe that whatever is owned by one is owned by all. This study revealed that children less than three years experienced more malaria and measles cases in the last six months. This is possibly influenced by sharing certain materials with persons infected. Respondents have different views and opinions about the hazards that occur regularly with their children, and some see these hazards as a norm that must happen to every child. A male interviewee in his own words said;

> *"Measles and cough is common with my children, it started first with one but has occurred again in another child. They are four of them and we stay together in a room and the children sleep on the same mattress. I believe that it is God that brings the sicknesses and it is only God that can take it away"*

(IDI/MALE/4 Children/ Trader/Moniya/Christian)

The above response again corroborates the fact that measles and cough are some of the common ailment experienced by children in crowded homes. This is also shown in table 5 below where a significant association is observed to exist between the number of children on a household and the common diseases experienced. A significant increase is observed in the number of respondents who experienced the common illness with increased number of children. For instance, twice the proportion (66.7%) of children with more than four children who experienced measles as a common sickness, experienced measles in families with less than four children (33.3%).

Table 5: Common sicknesses experienced by children in overcrowded Households

	Number of children		χ^2	p-value
	›4	**≤4**		
Common sickness				
Catarrh	(66.7%)	(33.8%)	1.267	0.037
Diarrhea	(55.9%)	(44.1%)		
Malaria	(56.0%)	(44.0%)		
Measles	(66.7%)	(33.3%)		
Stomach Aches	(85.0%)	(98.5%)		

Parenthesis-% * - significant at p value ‹0.05

Stomach aches was the only common ailment experienced by more respondents from families with four or less children (98.5%) than those with more than four children (85.0%).

Occurrence of health hazards on respondents' children

To further understand the effect of overcrowding on children health, the frequency of sickness amongst children were also examined. The table below revealed that a quarter of the children of respondents from the families' studies, always had cough 61.2% of the respondents' children always had malaria. This is not surprising as many of the families do not only belong to the low socio-economic background, but also reside in poor houses in poor environments which will breed mosquitoes and make them vulnerable to malaria. The poor environment coupled with poor nutrition and overcrowding aggravates the challenge for the girl- child as emphasized by Galguwa et al 2017. This may be so, particularly because of the pubertal and reproductive peculiarities of the girl-child

which evident in their experience of menstruation.

Table 6: Frequency distribution of occurrence of hazards among respondents' children

Common hazards	Never (%)	Rarely (%)	Always (%)
Measles	48.8	26.9	23.8
Cough	47.0	27.0	25.7
Cold and catarrh	43.5	19.5	37.0
Diarrhoea	63.8	12.4	23.3
Asthma	82.1	9.6	8.0
Malaria	7.7	31.1	61.2
Injuries	63.2	26.0	10.8
Pneumonia	89.2	7.51	2.7

The African family system celebrates more children, in fact when parents have just two children, they are assumed not to have given birth. Religion plays a role in the increase in the number of children, as the holy book clearly stated, "*children are the heritage of the lord*". A respondent even added that the bible states that God's creatures should *be fruitful and* "*multiply*". Children serve economic value especially when they become adults. The size of the room or number of person does not hinder their interest in having more children because there are other factors that encourage having more. This therefore aligns with the findings of Cassidy 1997 and Pepin Tozillor 2017 which states that there are other reasons attached to overcrowding.

Health risk of overcrowding on the girl-child

In order to examine whether overcrowding in homes has any unique health implication for the girl child, respondents were asked during the cause of the qualitative aspects of the study to narrate the consequences of overcrowding on the girl child. Several issues were raised ranging from discomfort, to inconveniences, to lack of privacy, to physical injuries, victims of aggressiveness, to stigmatization, shames during pubertal growth etc. a mother highlighted some of the issues emphasizing the inconvenience, stigma and lack of privacy experienced by her girl child because the 6 of them together with her husband and their children reside in one room with one of their cousins thus:

> *The challenge or problem overcrowding one room in a house gives to our female daughters are much. You know that girls mature at a certain age faster than boys for example at the age 10years my daughter*

already had breast and was waiting for only menstruation. Every other thing for puberty was already showing. She needed privacy by this time when she is dressing up but she cannot have it because of no space. Even. When she was much younger, the boys use to handle her roughly when they are playing and she will be injured or have one swollen head or so. You know that girls re weaker and more fragile than boys. So it is serious because now they are even laughing at her when she is trying to cover her breast when dressing. They boo her and make her ashamed of herself as if having breast is a crime. **(IDI/Female/38 years/4 children/ OJOO/trader/ Christian)**

The above statement summarizes the experience and ordeal of the young girl-child at pubertal age growing among other 4 siblings of opposite sexes in a room apartment. The same report was corroborated by another interview who added that the girl is always physically abused as she cannot play with her male siblings without being hit at the sensitive parts her body to prove to her that she is weak and fragile and should not join in the play being an only girl among 4 other growing boys saying:

I always feel very bad that I have just one girl among my four other sons because they always deal with her to prevent her from playing with them. Raising children in this neighborhood is very challenging because children see and learn all sorts I had to stop and always watch my children playing when the girl is always with them she complained that the drag her up and down and sometimes smack her breast and bom-bom to prove to her that she is "just a girl" and cannot join their team. **(IDI/Female/38 years/5 children/ MONIYA/trader/ Muslim)**

The response above again portrays the patriarchal nature of the average African male child being expressed even during play to relegate the girl-child to the background as is always the case even during role-play. Other implications relate are with references to inability for the girl-child to conveniently maintain her personal hygiene by reason of her reproductive nature especially during menstruation as expressed by a woman thus:

My daughter is usually stigmatized by her siblings who are all male any time she is on period. It was very difficult and it still is making them understand. She cannot bath long in the bathroom because we stay in a self-contain and share a bathroom and toilet. She therefore feels very bad and moody whenever she is menstruating because she needs to be extra clean and conscious not to be stained and embarrassed by her own brothers. It can be frustrating

(IDI/Female/38 years/4 children/ OJOO/trader/ Christian)

Many respondents emphasized the experience of unintended physical injuries inflicted on the girl-child because of rough play by their male siblings. Although others were silent on the experience of sexual abuse by their female daughter the body language during the discussions somehow revealed that many people were protecting their daughter who had being raped or abused from being stigmatized. Thus, again portraying the culture of silence on sexual matters and reports on rape that aggravate the incidences of rape.

Conclusion and Recommendations

This paper examined the effects of overcrowding on the health child development. It specifically discussed the health implications of overcrowding on the female children. It was revealed that as the number of children increased, the frequency of occurrence of certain health hazards also increased and such cases were reported more among female children. It was also revealed that children from families of more than four children and lived in a room were more exposed to communicable health hazards like chicken pox, malaria, measles cough, catarrh, etc. It is therefore an undeniable fact that childhood mortality is still prevalent in less developed countries. Children in these countries are being affected by some of these diseases that are less chronic. Furthermore, females experienced inconveniences, physical abuse, lack privacy, humiliation and even sexual abuse from siblings, fathers and other family members by reason of their exposure in a room or overcrowded spaces where they resided. The health implications of living in limited spaces and sharing a room with members of families of opposites sexes should be communicated to parents who have large family sizes. There is need for increased discuss on family planning. Government should create better housing families and enact policies that will promote adequate housing families for the ideal number of family members in each house. This will reduce the effect of overcrowding on the peaceful co-existence of family members and development of the girl-child.

References

Abdel R. Omran, "The Epidemiologic Transition Theory Revisited Thirty Years Later," World *Health Stat. Q.*, 1998,51,99 –119,102.127. Ibid., 114-128. See for example, Henry Blackburn, "Cardic

Adekunle G, Johnson O, Ademola L, Temilade A: 2017, 'Household Cooking Practices as Risk Factor for Acute Respiratory Infections among Hospitalized Under-5 Children in Ibadan, Nigeria' *IOSR Journal of Environmental Science, Toxicology and Food Technology* Volume 11, Issue 1 Ver. I, PP 60-65 www.iosrjournals.org

Adelaida L, Marta R, Valbuena, Luis M, 2014. 'Cough in Children' *British Medical Journal*, Bronconeumol; 50: 294-300

Adekunle G. F., Godson R. A., Muideen T. O. (2015). Housing quality and risk of acute respiratory Infections among hospitalized children under five in Ibadan, Nigeria. *Indoor and Built Environment SAGE Journals* Volume: 25 issue: 8, page(s): 1259-1266Article first published online: August 13, 2015; Issue published: December 1, 2016https://doi.org/10.1177/1420326X15599044

Adio-Moses R. O. (2016), Overcrowding a Threat to Environment and Safety and Wellbeing: an empirical Investigation of Female undergraduate Halls of Residence in a Nigeria University *Journal of Modern Education Review*, Volume 6, No 7 Pp.490-497

Ambrose, P. 1996:The Real Cost of Poor Homes: A Critical Review of the Literature, University of Sussex and University of Westminster.

Anyanwu and Adio-Moses, 2008, Overpopulation and communicable disease occurrence among students in secondary school in Ibadan Oyo State. Proceedings of the National Conference of the Nigerian Anthropological and Sociological Association Sokoto

Baker M., McNicholas A., Garrett N., Jones N., Stewart J., Koberstein V. and Lennon D. 2000. Household crowding a major factor for epidemic meningococcal disease in Auckland children, *Paediatric Infectious Disease Journal*, 19 (10) 983- 990

Baker, Michael, Dillip Das, Kamalesh Venugopal, and Philippa Howden-Chapman. 2008. 'Tuberculosis associated with household crowding in a developed country', *Journal of Epidemiology and Community Health* 62 (8): 715–721.

Blake, J, 1989. Number of siblings educational attainment. *Science direct, 245, 32-36.*

Brodie, M. 2012 "Childhood Cough" British Medical Journal 2012344 doi: https://doi.org/10.1136/bmj.e1177 (Published 06 March 2012),

Brooks-Gunn, Jeanne, Greg J. Duncan, and J. Lawrence Aber, 1997: *Neighborhood Poverty: Context and Consequences for Children*. New York: Russell Sage Foundation.

Child Trends: 2000. Preventing Problems Vs. Promoting the Positive: What Do We Want for Our Children Washington

Clauson-Kaas, J., Dzikus, A., Surjadi, C., Jensen, H., Hojlyng, N., Aaby, P., Baare, A. and Stephens, C; 1997. 'Crowding and Health in Low-Income Settlements, United Nations Developing Countries during the 1990s'. Bulletin of the World Health Organization 78:Development?" *American Journal of Sociology* 99: 353-95

Digby, A and Emily, F. 2017 "Impacts of Homeless on Children – Research with Teacher" In *Kantar Public* Pp 1-23 United States of America

----------2014: *overcrowding rate*. Eurostat. Glossary

Evans G, Saegert S and Harrris R, 2001. 'Residential density and psychological health among children in low income families'. *Environment and Behaviour*, 33, 2, 165-180

Evans G. 2003. The built environment and mental health. *Journal of Urban Health*;80(4):536–55. [PubMed]

Galgamuwa, L. Iddawel, D. and Galgamuwa, 2017 "Nutritional Status and Correlated Socio-economic factors among Pre-School and School Children in Plantation Communities, Srilanka." *BMC Public Health*

George IO., Tabansi PN. 2010. An audit of cases admitted in the children emergency ward in a Nigerian tertiary hospital. *Pak J Med Sci* 2010;26 (3):740-743

Gove WR, Hughes M, Galle OR. *Overcrowding in the household: an analysis of determinants and effects.* New York and London: Academic Press; 1983.

Gray A, 2001, *Definitions of crowding and the effects of crowding on health.* Ministry of Social Policy, New Zealand, Gray Matters research Wellington, New Zealand.

Jones L. 2012. 'Family size and its socio economic implications in the sunyani municipality of the Brong ahafo of Ghana'. *International Journal of Academic Research in Business and Social Sciences.* April 2012, Vol. 2, No. 4

Mackenbach JP., Kunst AE, Groenhof F., Borgan JK., Costa G., Faggiano F., Jozan P., Leinslau M., Martikainen P., Rychtarikova J., Valkonen T. 1999. 'Socioeconomic inequalities in mortality among women and among men: an international study'. *Am J Public Health.* Dec;89(12):1800-6

Mishra, V. and R.D. Retherford. 2007. 'Does Biofuel Smoke Contribute to Anaemia and Stunting in Early Childhood?' *International Journal of Epidemiology* 36: 117–129.

ODPM, 2004: The impact of overcrowding on health and education: a review of the evidence and literature.

Ojo, O. O. & Olaniran, M. (2017) Housing Condition and Human Health in Beere Area, Ibadan, Nigeria. *The International Journal Of Humanities & Social Studies* Vol 5 Issue 7 *(ISSN 2321 - 9203)*https://www.researchgate.net/publication/322665047_Housing_Condition_and_Human_Health_in_Beere_Area_Ibadan_Nigeria

Olowu A, Obasa O, 1991; Clinical Representation of Measles in Sagamu. Pages 59-61

Onyeaso C. O. (2004) Prevalence of malocclusion among adolescents in Ibadan, Nigeria. *American Journal of Orthodontics and Dentofacial Orthopedics 126(5):604-7* DOI: 10.1016/S0889540604002860https://www.researchgate.net/publication/8199252_Prevalence_of_malocclusion_among_adolescents_in_Ibadan_Nigeria

Pepin, C. Muckle, G, Mosa, C. Forget-Dubbois, N, Riva, M. 2018 "Household Overcrowding and Psychological Distress among Nunavik Inuit Adolescents: A Longitudinal Study" *International Journal of Circumpolar Health* Vol. 77, Issue 1. PP 113-134

Popoola, A., Tawose, O., Abatan, S., Adeleye, B., Jiyah, F., Nihinlola, M. (2015). Housing Conditions and Health of Residents in Ibadan North Local Government Area, Ibadan, Oyo State, Nigeria. *Journal of Environmental Sciences and Resources Management* Volume 7, Number 2, https://www.researchgate.net/publication/323703822_housing_conditions_and_health_of_residents_in_ibadan_north_local_government_area_ibadan_oyo_state_nigeria

Sharon V, Elizabeth C, Christina T, Kevin C, Michelle M, and Astrid A2006. Funders' Network for Smart Growth and Livable Communities 1500 San Remo Avenue, Suite 249, Coral Gables, FL 33146 www.fundersnetwork.org

Taiwo, P..and Ajayi, O. (2013) "Environmental Pollution in Urban Market: The Case of Bodija Market Ibadan, Nigeria" *Journal of Developing Countries Studies* Vol. 3. No13. Pgs 53-66

Torzillo, P., 2017 "Reducing the negative impacts of Crowding" *Housing for Health-The guide. Retrieved online from housing for health.com on 20/09/2017*

Wilson W. 2014. *Overcrowded housing (England)*. London: House of Commons Library;

Wilkinson, D. 1999. Poor housing and ill health: A summary of research evidence, The Scottish Office Central Research Unit, Edinburgh.

Woldemicael G. 2001. 'Diarrhea morbidity among young children in Eritrea: Environmental and socioeconomic determinants'. *Journal of health, population, and nutrition*. 19. 83-90.

World Health Organization, 2004. Guidelines for Measles Surveillance. Africal Regional Office, Available from www.afro.who.int

World Health Organization, 2013. Barriers and facilitating factors in access to health services in the Republic of Moldova. Copenhagen, WHO Regional Office for Europe.

World Health Organization, 2018WHO Housing and Health Guidelines. Geneva:https://www.ncbi.nlm.nih.gov/books/NBK535289/https://www.who.int/publications/guidelines/en/