

Influence of Care-Givers' Literacy on Paediatric Patient Health Management in Specialist Hospitals in Ondo State, Nigeria

Olusegun O. Owolewa
Department of Arts Education
Adekunle Ajasin University,
Akungba Akoko, Ondo State, Nigeria.

Abstract

Low health literacy has been associated with poor communication between patients and health providers, but little is known about care-givers' health literacy influences on paediatric patients' health management. The study employed descriptive research design of the survey type. The population for the study was all the care-givers of paediatric patients and paediatricians in Ondo State Specialist Hospital, Akure, Nigeria, from which 87 respondents, comprising 37 doctors and 50 care-givers were sampled using simple random sampling technique. The data required for the study were generated through questionnaire and analysed using Chi square statistics, mean distributions and standard deviation. The findings indicated that health literacy of care-givers of paediatric patients was below average and that it influenced paediatric patients' health management. Based on these findings, it is recommended, among other things, that paediatricians should actively consider how they can ensure that the core concepts of family-centred care are incorporated into all aspects of their professional practice and that the care-givers should be offered support before, during, and after medical procedure to increase their knowledge about their child's health literacy.

Keywords: Care-Givers, Literacy, Paediatric Patient, Health Management, Specialist Hospitals

INTRODUCTION

Every day, Nigerians confront situations that involve life-changing decisions about their health. Only little of these decisions are made when patients and their health care providers are in a face-to-face consultation; while a little more are made when people are on their own and dealing with often unfamiliar and complex health problems. Whereas, people need information they can understand and use to make informed decisions and take actions that protect and promote their health (Nielsen-Bohlman, 2014), not much of this information is available to them. Consequent of this gap in health literacy is that patients often recourse to self-medication. The health implication of this unwholesome practice is better imagined than experienced.

Directly or indirectly, through written words, health literacy skills are required in various aspects of doctor-patient dialogue, discussion of diagnostic and therapeutic plans, use of medical tools such as nebulizers or peak flow meters, follow-up instructions, or administration of home medications. Poor health literacy has been associated with several adverse health outcomes, including increased incidence of chronic illness, poor intermediate disease markers, suboptimal use of preventative resources, and increased rates of hospitalization and use of emergency services (Nielsen-Bohlman, 2014 and Berkman, 2014).

Health literacy is described as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (Institute of Medicine 2004; Ministry of Health, 2010). Health literacy is more than improving the quality of information and information flow between individuals, communities, health practitioners and the health system. It requires individuals ability to synthesis information they receive from the health system and other sources, decide whether they have enough information and if not gather more, and then act on the information.

Health literacy is a shared function of social and individual factors, which emerges from the interaction between the individual and the health care system. At first glance, health literacy may appear to be primarily concerned with the comprehension of reading materials, and there is, indeed, a clear and established link between reading skills and health literacy (Fetter, 2013). However, there is much more to being health literate than simply the ability to read. Much of the health information that people are expected to comprehend is in the form of one-on-one interactions with health professionals and health information presented through various forms of media. At its core, the health literacy issue is one of a mismatch between people's skills and the demands of the healthcare system. Modern healthcare requires more participation of the individual, both in the

clinical setting and in lifestyle choices, than ever before.

On the other hand, Paediatrics, according to Wikipedia (2018), is the branch of medicine that involves the medical care of infants, children, and adolescents. The American Academy of Paediatrics recommends that people must be under paediatric care up to the age of 21. A medical doctor who specializes in this area is known as a paediatrician. However, for this paper, we consider a paediatric patient as chronologically a child between ages 0-6 or a new-born (0-1 month) that is normally alert, looking around and focusing well on faces, likes to be held and kept warm, capable of yelling often but may be soothed by having something to suck, no language, no thought no notion of objective reality; infant (1-12months) that is normally alert, looking around, eyes follow examiner, uses inborn motor and sensory reflexes (sucking, grasping) to interact and accommodate to the external world, no language, no thought and no notion of objective reality ; toddler(1-3years) is capable of language and symbolic thought representations of events and object, does not like to sit still, may grab penlight or push hand away and pre-schooler (3-6years) who is capable of understanding language of the home environment and egocentric thought reason, dominated by perception intuitive. Owing to lack of expression and ability to make treatment choices, the care-giver stands as intermediary between the paediatrician and the child - patient. The quality of information the paediatrician gets on the health of the child rest squarely on the knowledge and skills of the care-giver. The health literacy skills of a care-giver may further contribute to disparities in patient and health provider communication (Koh, Berwick & Clancy,2012). Approximately 1 in 4 care-givers (Yin, Johnson & Mendelsohn, 2014) have limited health literacy skills defined as the degree to which individuals [care-givers] have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions [for their child] (Eagle,2015).

Similar to risks associated with poor communication, limited care-givers' health literacy has been associated with minority race, low educational level, low income, public insurance, and single parenthood. There is a strong relationship between a person's health literacy and their health status (Ministry of Health, 2012). Although there is little research that specifically investigates the health literacy amongst care-givers or care-givers' is related to worse health outcomes for children (DeWalt, Dilling, Rosenthal & Pignone, 2017), one longitudinal study about literacy and asthma self-management skills showed that improvements in the reading abilities of minority children reduced repeat emergency department visits

and hospitalizations (Sanders, Thompson & Wilkinson, 2007).

Improving health literacy among adult population has emerged as a major focus of the research agenda of public health and a major goal of healthy people. Poor health literacy is associated with poorer perceptions of health, less utilization of services (particularly those related to disease prevention), and poorer understanding of verbal and written instructions for self-care. Thus, it is logical to extrapolate that care-givers with poor health literacy skills would negatively affect their children's health.

Children could hardly talk; this makes doctors to rely on secondary sources for information provided by their care-givers. It is therefore important for care-givers to have health literacy. The degree of health literacy researched among paediatric care-givers appears to be minimal or limited. There is need to determine the care-givers' health literacy level and influence on paediatric patients' health management.

The study therefore answered the following research questions:

- 1 What is the care-givers health literacy level?
- 2 Will care-givers health literacy influence paediatric patients' health management?
- 3 What is the percentage of care-givers' health literacy awareness Paediatric patients' health management?
- 4 What are the sources of care-givers' health literacy awareness about Paediatric patients' health management

HO₁: There is no significant influence of care-givers' health literacy on paediatric patient's health management.

METHOD

The population comprises all paediatric care-givers and paediatricians in Specialist Hospitals Akure Ondo State, Nigeria. The sample of the study therefore comprised 37 doctors and 50 care-givers, whose children were within the range of age 0-6 years, totalling 87 respondents. The individual subjects were selected by simple random sampling. Data were collected using questionnaires. There were two sets of questionnaires, one for the paediatricians and the other for the care-givers of paediatric patients. The questionnaires contained two major sections. Section A comprised the demographic information of the respondents, while Section B contained items set around the research questions. A pilot study was conducted in a neighbouring environment. The aim of the pilot study was to gauge the clarity and relevance of the items on the

instrument. Items found to be inadequate for measuring variables were either discarded or modified to improve the quality of the research instruments.

Test-retest method was used to determine the reliability of the instrument. This involved administering the same instrument twice to the same group of subjects. The researcher administered the questionnaire again after two weeks. This would help in determining the reliability of the instrument.

This study generated quantitative data which was arranged and recorded under particular research questions after which data were analysed using Chi square statistics, mean distributions and standard deviation. The formulated hypothesis was tested using regression analysis.

Research Question 1: What is the health literacy level among care-givers of paediatric patients?

Table 1. Chi Square summary on statement regarding health literacy level of care-givers of paediatric patients

Items		Response				Total
		SA	A	D	SD	
I have not heard about health literacy	F	4	4	29	13	50
	%	8.0	8.0	58.0	26.0	100.0
I do not have any knowledge of health literacy	F	2	8	27	13	50
	%	4.0	16.0	54.0	26.0	100.0
I have not attended any health literacy programme	F	1	10	29	10	50
	%	2.0	20.0	58.0	20.0	100.0
My child's doctor has never discussed the benefit of health literacy with me	F	1	4	31	14	50
	%	2.0	8.0	62.0	28.0	100.0
I do not know the impact of health literacy on my child's health outcome	F	4	6	23	17	50
	%	8.0	12.0	46.0	34.0	100.0
Average Total	F	2	6	28	14	50
	%	4.0	12.0	56.0	28.0	100.0
Chi Square	X ²	31.600				
	df	3				
	p	< .05				

Based on the responses from the responding care-givers, it was observed that majority of the respondents (84%) did not agreed with the statement that they have not heard about health literacy, while just 16% supported it. Majority of the respondents (80%) also negated the statement that said they do not have any knowledge of health literacy, while 20% supported it. In a similar trend, most of the respondents (78%) negated the statement that said have not attended any health literacy programme, while 22% supported it. It was also noted that most of the respondents (90%) were not in support of the statement that said their child's doctor has never discussed the benefit of health literacy with them. This implied that they have gotten knowledge about health literacy from their doctors. Lastly, it was noted that majority of the respondents 80% did not agreed

with the statement that they do not know the impact of health literacy on my child's health outcome, while 20% felt otherwise.

Conclusively, 84% of the responding care-givers confirmed their health literacy on paediatric patients, while 16% did not. The X² value of 31.600 and df of 3 revealed a 'p' value that was less than 0.05 level of significant, thus indicating that the observed differences in the responses were valid for summation.

To further clarify the results, analysis was conducted on responses from the sampled doctors and the result is presented below:

Table 2: Descriptive summary showing the health literacy level of care-givers of paediatric patients

	Option	Frequency	%	Levels	Min	Max	Mean	SD
What is the percentage of health literacy among care-givers of paediatrics patient you have treated?	20% - 30%	12	32.4	Literal				
	31% - 40%	16	43.2	Inferential				
	41% - 50%	8	21.6	critical	20	60	37.51	8.812
	51% - 60%	1	2.7	Evaluative				
	Total	37	100.0					

The result from responding doctors revealed that from their observations the level of health literacy among care-givers of paediatric patients ranges between 20 to 60 percentage with 37.5% as the average (SD=8.812). The distributions were such that 32.4% affirmed that the percentage of health literacy among care-givers of paediatric patient they have treated were between 20 and 30 percentage, 43.2% of the responding doctors affirmed that it was between 31 and 40 percentage, 21.6% said it was between 41 and 50 percentage, while 2.7% said it was between 51 and 60 percentage. From the distribution, it was evident that the most group on literacy education was the affirmation of the range between 31 and 40 percentage of the health literacy level among care-

givers of paediatric patients. This level was not up to the critical level of literacy, but could just attain the inferential level.

This gave a much clear explanation on the knowledge of health literacy level among care-givers of paediatric patients and it could be explained that the care-givers have heard and experience health literacy from various avenues, but their health literacy level is still below fifty percentage, thus it still require improvement.

Research Question 2: Will care-givers’ health literacy influence paediatric patients’ health management?

Table 3: Chi Square summary from care-givers on statement regarding the influence of care-givers’ health literacy on paediatric patients’ health management

Items		Response				Total
		SA	A	D	SD	
®I have not learnt well enough on how to manage my child’s health	F	14	13	15	8	50
	%	28.0	26.0	30.0	16.0	100.0
I use health management tips on my child/ children health condition	F	14	30	6	-	50
	%	28.0	60.0	12.0	-	100.0
I allow my child/ children to participate in sports programme	F	8	37	5	-	50
	%	16.0	74.0	10.0	-	100.0
I participate in health literacy programme because of the health management of my child/ children	F	7	34	9	-	50
	%	14.0	68.0	18.0	-	100.0
®Health literacy does not have any impact on my child’s health outcome	F	2	8	31	9	50
	%	4.0	16.0	62.0	18.0	100.0
Averaged Total	F	9	30	8	3	50
	%	18.0	60.0	16.0	6.0	100.0
Chi Square	X ²	34.320				
	Df	3				
	P	< .05				

It was observed in Table 5 that majority of the respondents (54%) affirmed the statement that they have not learnt well enough on how to manage their child’s health, while 46% did not agree. It was indicated that 88% of the respondents supported the statement that they use health management tips on their child or children’s health condition, while 12% did not. The table shows that 90% of the respondents were of the opinion that they allow their child or children to participate in sports programme, while 10% said otherwise. It was noted that 82% of the respondents supported the statement that they participate in health literacy programme because of the health management of my child/ children, while 18% said otherwise. Lastly, it was negated by most of the respondents (80%) that health literacy does not have any impact on their child’s health outcome, while 20% said otherwise.

management, while 22% said otherwise. The X² value of 34.320 and df of 3 revealed a ‘p’ value that was less than 0.05 level of significant, thus indicating that the observed differences in the responses were valid for summation. This implied that health literacy has impact on health management of paediatric patients.

To further clarify the results, analysis was conducted on responses from the sampled doctors and the result was presented below:

The average summary revealed that majority of the respondents (78%) were of the opinion that health literacy influence paediatric patients’ health

Table 4: Chi Square summary from doctors on statement regarding the influence of care-givers' health literacy on paediatric patients' health management

Questions		Response		
		Yes	No	Total
Do you think health literacy awareness will improve the quality of health care delivery?	F	36	1	37
	%	97.3	2.7	100.0
Do you think that care-givers health literacy may assist the management of paediatric patients?	F	36	1	37
	%	97.3	2.7	100.0
Averaged Total	F	36	1	37
	%	97.3	2.7	100.0
Chi Square on averaged total	X ²	33.108		
	df	1		
	p	< .05		

It was noted that majority of the responding doctors (97.3%) affirmed the statement that they think health literacy awareness will improve the quality of health care delivery, while just 1% said otherwise. In addition, 97.3% were of the opinion that care-givers health literacy could assist the management of paediatric patients, while 1% felt contrary. The summary revealed that 97.3% of the responding doctors confirmed that care-givers' health literacy influence paediatric patients' health management.

This was also confirmed by the chi square result that was significant (X²=33.108, df=1, p < .05). The findings in Table 6 thus support that of Table 5 and they both opined that care-givers' health literacy influence paediatric patients' health management

Research Question 3: What is the percentage of health literacy awareness among paediatric Patients' care-givers?

Table 5: Chi Square summary on statement regarding

Items		Response				Total
		SA	A	D	SD	
®I don't often get update on health literacy	F	17	18	11	4	50
	%	34.0	36.0	22.0	8.0	100.0
®There is no health literacy programme centre in my area	F	4	25	21	-	50
	%	8.0	50.0	42.0	-	100.0
®The doctors do not often arrange for health literacy discussion	F	7	32	10	1	50
	%	14.0	64.0	20.0	2.0	100.0
®I am not aware of any health literacy programme	F	5	12	27	6	50
	%	10.0	24.0	54.0	12.0	100.0
I always attend any health literacy programme I hear about	F	5	29	12	4	50
	%	10.0	58.0	24.0	8.0	100.0
Averaged Total	F	3	20	20	7	50
	%	6.0	40.0	40.0	14.0	100.0
Chi Square	X ²	18.640				
	Df	3				
	P	< .05				

The table indicated that majority of the responding care-givers (70%) affirmed the statement that they don't often get update on health literacy, while 30% said otherwise. It was also affirmed by majority of the responding care-givers (58%) that there is no health literacy programme centre in their area, while 42% said otherwise. It was also observed, based on majority response (78%) that the doctors do not often arrange for health literacy discussion, thus limiting the awareness among care-givers of paediatric patients. Majority of the respondents (66%) negated the statement that said they are not aware of any health literacy programme, while 34% supported it. Lastly, 68% of the respondents were in support of the statement that they always attend any health literacy

programme they hear about, while 32% said otherwise.

The average summary revealed that 46% of the respondents confirmed their health literacy awareness, while 54% did not. This implied that majority of 54% do not have health literacy awareness among care-givers of paediatric patients. This was also confirmed by the chi square result. The X² value of 16.080 and df of 3 revealed a 'p' value that was less than 0.05 level of significant, thus indicating that the observed differences in the responses were valid for summation. The opinions of the doctors were also sorted to further clarify the results, analysis was conducted on responses from the sampled doctors and the result was presented below

Table 6: Descriptive summary showing the estimate of health literacy level among care-givers of paediatric patients

	Option	Frequency	%	Min	Max	Mean	SD
What is the estimate of the health literacy level among care-givers of paediatric patients?	1% - 10%	1	2.7				
	11% - 20%	1	2.7				
	21% - 30%	10	27.0	10	50	36.08	8.345
	31% - 40%	19	51.4				
	41% - 50%	6	16.2				
	Total		37	100.0			

The result from responding doctors in Table 8 indicated that the estimate of health literacy level among care-givers of paediatric patients was between the ranges of 10 and 50 percentage with 36.08% mean (SD=8.345). The distribution was such that 2.7% of the responding doctors affirmed that the estimate of the health literacy level among care-givers of paediatric patients was between one and ten percentage, 2.7% also affirmed that it was between 11 and 20 percentage, 27% said it was between 21 and 30 percentage, 51.4% said it was between 31 and

40 percentage, while 16.2% said it was between 41 and 50 percentage. From the distribution, it was evident that the estimate of the health literacy level among care-givers of paediatric patients was highest and could be concluded based on majority as ranging between 31 to 40percentages.

This gave further explanation on the awareness of health literacy among care-givers of paediatric patients such that they had awareness level that is below 50%.

Table 7: Chi Square summary from doctors on statement regarding the influence of care-givers' health literacy on paediatric patients' health management

Questions		Response		
		Yes	No	Total
Have you participated in health literacy conference or workshop in the last two years?	F	22	15	37
	%	59.5	40.5	100.0
Would you recommend health literacy campaign for care-givers of paediatric patients?	F	37	-	37
	%	100.0	-	100.0
Averaged Total	F	30	7	37
	%	81.1	18.9	100.0
Chi Square on averaged total	X ²		14.297	
	Df		1	
	P		< .05	

Confirming the above, the responses from doctors were obtained and analysed in Table 11. It was indicated that 59.5% had participated in health literacy conference or workshop in the last two years, while 40.5% had not. It was opined by all the responding doctors (100%) that they would recommend health literacy campaign for care-givers of paediatric patients. This implied that such campaign would enhance health literacy among care-givers and also aid the management of paediatric

patients in general. These observed responses were also confirmed by the chi square results (X²=14.297, df=1, p < .05).

TEST OF HYPOTHESIS

Hypothesis 1: Health literacy has no significant influence on the paediatric patient health management by their care-givers

Table 8: Simple Regression showing the influence of Health Literacy on Management of Paediatric Patient's Health by Care-givers

Variables	β	T	R	R ²	df	F
Health literacy	.483	3.820**	.48	.23	1, 48	14.60**

** p< 0.01, N= 50

The result indicated that health literacy had significant influence on the management of paediatric patient's health by care-givers ($\beta = 0.483$, $t = 3.820$, $p < .05$). This was such that the management of paediatric patient's health increases with increase in their care-givers' health literacy. This finding negates the null hypothesis 1 and it was rejected. It was also noted in the table that health literacy of care-givers contribute a significant impact of 23% to the total observed variance in the management of paediatric patient's health [$R = 0.48$, $R^2 = 0.23$, $F(1, 48) = 14.60$, $p < .05$]. Therefore, a reasonable improvement in the health literacy of care-givers will increase and improve the health management of paediatric patient.

DISCUSSION

Poor health literacy is associated with several adverse health outcomes including increased incidence of chronic illness, poor intermediate disease markers, suboptimal use of preventative resources, and increased rates of hospitalization and use of emergency services. The potential impact of inadequate health literacy on health outcomes is significant. The outcome of this analysis agrees with the findings of Williams (2010). He undertook a pilot study to assess health literacy levels in care-givers or guardians of paediatric patients who presented to our ED for care. His findings show that 65% of adults had "adequate" health literacy.

The outcomes of the study by Level1 trauma centre (Rudd, Moeykens & Cotton, 2012) on Research Question two revealed that majority of the respondents were of the opinion that health literacy influence paediatric patients' health management. This implies that health literacy has impact on health management of paediatric patients. These findings aligned with the findings of Level 1 trauma centre that assumed that balanced rotating shift schedule (morning, evening, night) covering seven days per week was used to achieve a more representative sampling of the ED population which help managing paediatric patients through health literacy.

Also, the findings agreed with Dr.Rulan Parekh, the study's principal investigator and Associate Chief of Clinical Research, Staff Physician in Nephrology and Senior Scientist at Sick Kids (Weiss, 2017) said that home management and assessment needed by care-givers is needed to understand care-givers health literacy in these chronic conditions may potentially have a large impact on health outcomes for those kids

The Journal of Health Communication examined how care-givers' health literacy affected communication between care-givers and diabetes educators in a paediatric diabetes clinic. A mixed methods study was conducted including a cross-sectional survey of 162 care-givers and semi-structured interviews with a subsample of 24 care-givers of a child with Type 1

diabetes. Care-givers' and child characteristics, care-givers' report of quality of communication, and care-givers' health literacy were assessed. Logistic regression was performed to determine associations between health literacy and 4 subscales of the Interpersonal Processes of Care (IPC) survey; directed content analyses of interview data were completed. They agreed that Low health literate care-givers were confused by diabetes jargon, preferred hands-on teaching, and wished for information to be communicated in simple language, broken down into key points, and repeated. Care-givers with adequate health literacy wanted comprehensive information communicated through on-going dialogue. Findings indicate that learner-driven curricula may be most appropriate for diabetes education

The result of the Research Question four shows that care-givers of paediatric patients get information on health literacy from the television/ radio/ newspapers/ magazine also some care-givers said they get information on health literacy through internet/ social media. The result also affirmed that care-givers get information on health literacy through friends or neighbours or family members and sometimes directly from hospital. Affirming the outcome of the findings, Dr.Rulan Parekh's study in 2017 shows education doesn't always correspond to health literacy. There are lots of items that require understanding in health care. You have to understand the health-care system, how it works, how to monitor symptoms of the disease and also understand the family's role in adherence to a medical plan. These are all important parts when receiving care. These factors, in addition to having trust in the health-care system, and coping with the stress of a child who suddenly gets sick, can all make true comprehension of instructions much more difficult.

The finding of Research Question Five shows that health literacy campaigns would enhance health literacy among care-givers and also aid the management of paediatrics patients in general. This affirm the outcome of the study by Hassan and Heptulla (2010) who find that children of care-givers with inadequate health literacy had significantly poorer health control compared to the care-givers with adequate health literacy. Rootman and Ronson, (2017) affirmed that when children are very sick or experience complications; care-givers become more health literate over time. However, health literacy probably has its greatest impact when the child is first diagnosed and home management begins.

The analysis of the hypothesis show a reasonable improvement in the health literacy of care-givers will increase and improve the health management of paediatric patient. The outcome of the study contrasts the cross sectional study examining mediator variables between literacy and diabetes control by DeWalt, Dilling, Rosenthal, and Pignone, (2017) that

find no relationship between health literacy and haemoglobin A1C levels, suggesting a weaker relationship. Also, Bennett, Robbins & Haecker, (2013) said Health literacy plays a critical role in medication safety, and patients and caretakers with low health literacy are at disproportionate risk of difficulty with deciphering medication instructions. Paediatricians should work with policy makers, regulatory authorities, safety experts, drug manufacturers, and pharmacists to reduce the risk for medication errors by designing, evaluating, and standardizing drug labels, measuring devices, and written and verbal communication for prescription and over-the-counter medications.

CONCLUSION

The Yoruba adage says **aralileloogunoro** which literally means, health is wealth. This underscores the importance of health to the wealth of a nation. When the citizenry are healthy the prosperity of such nation would increase in leaps and bounds. The ability to obtain, read and understand and make use of health related knowledge by parents or the care-givers has been established to contribute in a great measure to paediatrics health management. There is likelihood that infant mortality will reduce and population may increase. When increase in population is matched with increase in production, economic boom may occur. The nation becomes wealthy. It behaves on the health practitioners to strengthen media by which the citizen can improve upon knowledge of health information and usage.

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