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## Parental knowledge and impact on growth in children with congenital heart diseases in Aminu Kano Teaching Hospital

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**Abstract:** *Objectives:* Parental knowledge of a child's heart disease, treatment and prevention of complications may promote a better health related behavior towards the care of the child. Most of these children often present with failure to thrive which the parents may not associate with the disease. This study is aimed at determining the knowledge of parents of children with congenital heart disease (CHD) and the impact of the disease on their growth.

*Methods:* This was a cross sectional study consisting of parents and children with CHD attending the Pediatric Cardiology Clinic of Aminu Kano Teaching Hospital. Relevant information was gotten from pre-tested questionnaires-containing data such as age, anthropometric parameters, educational level of parents and knowledge of their children's cardiac defect.

*Results:* Out of the one hundred

and three parents recruited in this study, ninety-one (88.3%) of the parents knew the correct cardiac diagnosis, which had no statistically significant association with their educational status. There was statistically significant association between maternal educational status and ability to name the medications ( $X^2= 27.01$ ,  $df=12$ ,  $p=0.008$ ). A total of sixty nine (67%) children have a WAZ score of  $-2$  and  $<3$  while forty five (43.7%) have an HAZ of  $-2$ .

*Conclusion:* Adequate knowledge will ensure better compliance to medications which can reduce morbidity and early mortality before surgical intervention. Therefore continuous patient/caregiver education is imperative for their long time survival because even surgery may not completely eliminate all complications associated with it.

**Keywords:** Congenital heart disease, Parental knowledge, growth.

### Introduction

The importance of adequate knowledge of diseases especially those that are chronic by the patients and their care givers cannot be overemphasized.<sup>1</sup> The resulting change in health behavior is expected to maximize their health benefits,<sup>2</sup> which is achieved through educating their care givers who are often the biological parents.

Congenital heart diseases constitute a major burden among children with cardiovascular disease. It still remains a major cause of morbidity and mortality particularly in resource limited countries.<sup>3,4</sup> This is because 90% of cardiac care facilities are located in high income countries, serving only 7% of the world's population.<sup>5</sup>

Parental knowledge of a child's heart disease, treatment and prevention of complications may promote a better health related behavior towards the care of the child.<sup>6</sup> A better understanding will improve compliance with treatment and ensure avoidance of risky behaviors.<sup>6</sup>

Good nutritional practice is also important in improving their growth.<sup>7</sup> This is particularly important because most of these children fail to thrive due to anorexia, increased respiratory rate, increased metabolism, oedema with easy satiety and the natural course of many congenital heart diseases..

This study is therefore aimed at determining the knowledge of parents of children with congenital heart disease concerning the disease and the impact of the disease on growth, amongst patients attending Paediatric cardiology outpatient clinic of Aminu Kano Teaching Hospital in Kano.

### Subjects and Methods

This study was cross sectional and was conducted from April 2013 to April, 2014. The study population con-

sisted of parents and children with congenital heart diseases attending the Pediatric Cardiology Clinic of Aminu Kano Teaching Hospital. With relevant information was gotten from pre-tested questionnaires- containing demographic data such as age, educational level, the parents were obtained and knowledge of their children's cardiac defect and anthropometric parameters of the children. These were corroborated with the patient's medical records.

Parents of children with congenital heart disease attending the pediatric cardiology clinic for at least 6 months were included; however those that refused consent were excluded, similarly those whose children had other chronic morbidity such as Down's syndrome, Cerebral palsy were excluded.

Ethical clearance for the conduct of the study was obtained from Ethicals Committee of Aminu Kano Teaching Hospital Kano and informed consent was obtained from the subjects/parents. Anthropometric measurements of weight, length were done by the investigators assisted by two trained clinical assistant. The values were plotted on standardized World Health Organization (WHO) growth charts and malnutrition was classified based on WHO criteria<sup>7</sup>. The recommended criteria of the WHO are based on calculated z scores for anthropometric indices. A z score of  $\geq 2$  of the child's Weight for age (WAZ), Height for age (HAZ) or Weight for height (WHZ) represents 2 SD below the age- and gender-specific median for the normal population and 3 SD below the median cut-off if the z score is  $\geq 3$ . A Weight for age (WAZ), z score of between  $>-2$  and  $\geq 2$  is indicative of normal nutrition<sup>7</sup>.

#### Data Analysis

Statistical Package for Social Sciences (SPSS) version 16 was used for data analysis. Quantitative variables were summarized using measures of central tendency (mean and standard deviation). Qualitative variables were summarized using frequency distribution (percentages), while test of significance using Chi squared ( $\chi^2$ ) test with p-value set at  $<0.05$  was deployed.

## Results

### Knowledge of diagnosis, treatment and outcome

Acyanotic congenital heart defects were the commonest CHD with ventricular septal defect constituting 49.5%, while tetralogy of Fallot remained the commonest cyanotic congenital heart defect. Most of the parents (88.3%) knew the correct diagnosis of the diseases of their children/wards. Only 35.9% of the parents believed medication alone could correct the cardiac defect while 64.1% believe their wards will require surgical correction of their defects.

**Table 1:** Common congenital cardiac defects among children of the study population

Defect	Frequency	Percent
VSD	51	49.5
ASD	8	7.8
TOF	14	13.6
PDA	4	3.9
Others	26	25.2
Total	103	100.0

VSD- ventricular septal defect; ASD= atrial septal defect; TOF= tetralogy of Fallot; PDA= patent ductus arteriosus; Others = Atrioventricular septal defects, tricuspid atresia, complex congenital cardiac defects etc

### Care-giver knowledge of cardiac defect and medications

Out of the one hundred and three parents recruited in this study. Ninety-one (88.3%) of the parents were able to correctly mentioned the diagnosis of their wards' cardiac defect and this had no statistically significant association with their educational status. While 27 (26.2%) of the parents were able to name one medication their wards were presently taking. 53 (51.5%) could name at least two medications; 11 (10.7%) could not mention any while (12 (11.7%) were not on any medication (Table 2). There was statistically significant association between maternal educational status and ability to name the medications ( $\chi^2= 27.01$ ,  $df=12$ ,  $p=0.008$ ).

**Table 2:** Maternal educational status and ability to correctly name medications

	No education	Primary	Secondary	Total
None	8	2	1	11
1 drug	1	2	24	27
$\geq 2$ drugs	9	10	34	53
Total	18	14	59	91

$\chi^2=28.585$ ,  $df=4$ ,  $p=0.0001$

### Anthropometry

A total of sixty nine (67%) children have a WAZ score of  $\geq -2$  and  $<3$  while forty five (43.7%) have an HAZ of  $\geq -2$  (Tables 3 ad 4).

**Table 3:** Weight distribution of children using z-score

z score weight (SD)	Age range of patient (years)				Total
	<1	1-5	6-10	>10	
$>-2$	1	21	11	1	34
$<-2- 3$	2	18	2	1	23
$<-3$	18	20	8	0	46
Total	21	59	21	2	103

**Table 4:** Height distribution of the children with CHD studied using z-score

z score	height	Age range of patient				Total
		<1	1-5	6-10	>10	
>-2		9	33	14	2	58
<-2		12	26	7	0	45
Total		21	59	21	2	103

## Discussion

In this study, most parents were aware of their wards' diagnosis (88.3%), this was comparable to that reported by Bulat et al<sup>9</sup> (71%) and Al-Jarallah et al (98%)<sup>10</sup> but much higher than reported by Mahdi et al (30%)<sup>8</sup> and Cheuk et al (59%).<sup>6</sup> This may be because most of our subjects had simple acyanotic congenital heart defects which made explanation, comprehension and parental education easy. An adequate parental knowledge of their children's diagnosis will aid compliance to medical management and reduce anxiety<sup>11</sup>.

Acyanotic congenital heart diseases such as ventricular septal defect were most predominant while tetralogy of Fallot was the commonest cyanotic congenital heart defect documented in this study; this may be attributed to early demise of most cases with more complex cyanotic congenital heart diseases in the absence of early surgical intervention while simple acyanotic congenital heart defects such as ventricular septal defect may survive into older age even in the absence of surgical correction.<sup>12</sup> Only five (4.9%) of the patients had corrective surgery as at the time of study, which is similar to most experiences in resource limited settings<sup>14</sup> where surgery can only be procured abroad and only affordable to those with the resources to sponsor such trips. Majority of our patients were sustained on medications.

In this study, only 51.5% could name at least two medications while 26.2% were only able to mention only one medication that their wards were placed on. This is quite

instructive since all the subjects in this study have attended the clinic for a period of not less than six months. This may reflect the level of communication between the managing team and the primary care givers and probably the degree of motivation in the management by the primary care givers. Cheuk et al<sup>6</sup> who carried out a similar study did not state the percentage of parents who were able to mention the number of medications their wards' were placed on but only stated that 44.6% knew the correct function of the medications.

Some degree of malnutrition was found in sixty nine (70%) of the children. Underweight and severe malnutrition were mostly seen in the 1-5 year age-group, which compares to the age-range of malnutrition in Nigeria<sup>15</sup> but the value is much higher than the 44.9% reported by Aliyu et al<sup>16</sup> as the prevalent rate of malnutrition in northern Nigeria. Our finding is lower than the 90% reported by Okoromah et al<sup>17</sup> among children with congenital heart diseases in Lagos, Nigeria but higher than the values reported by Mahdi et al (55%)<sup>8</sup> and Varen et al.<sup>21</sup> in Sudan and Turkey respectively. These studies although with varying degrees of malnutrition confirm the deleterious effects of CHD on growth.

## Conclusion

Most parents were aware of the specific diagnosis of their wards' ailments and their medications but twenty five percent were only able to mention one medication. Adequate knowledge will ensure better compliance to medications which can reduce early mortality before surgical intervention. Therefore continuous patient/caregiver education on the care of these patients is imperative for their long time survival because even surgery may not completely eliminate all complications associated with it.

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## References

- Danford, D.A. Parents of children with congenital heart disease lack knowledge needed for optimal care. *AAP Grand Rounds 2004*; 11:61-62
- Harm T. Patient education in Estonia. *Patient Educ Couns 2001*; 44:75-8.
- Hoffman JI. The global burden of congenital heart disease. *Cardiovasc J Afr 2013*; 24:141-145
- Children's HeartLink. Global Report 2007. Linked by a common purpose: global efforts for improving pediatric heart health. Available at: <http://www.childrensheartlink.org/docs/globalreport>. Last accessed 17th October 2012.
- Hewitson J, Brink J, Zilla P. The challenge of pediatric cardiac services in the developing world. *Sem Thor Cardiovasc 2002*; 14: 340-345.
- Cheuk DKL, Wong SMY, Choi YP, Chau AKT, Cheung YF. Parents' understanding of their child's congenital heart disease. *Heart 2004*; 90: 435-439.
- World Health Organization. The WHO Child Growth Standards. Available at: <http://www.who.int/childgrowth/standards/en/>. Last assessed 10/6/2014
- EL Mahdi LM, Hashim MS, Ali SKM. Parental knowledge of their children's congenital heart disease and its impact on their growth. *Khartoum Med J 2009*; 2:191-6
- Bullat DC, Kantoch MJ. How much do parents know about their children's heart condition and prophylaxis against endocarditis in Edmonton. *Can J Cardiol 2003*; 19: 5016-9.
- Al-Jarallah AS, Lardhi AA, Hassan AA. Endocarditis prophylaxis in children with congenital heart disease. A parent's awareness in Saudi Arabia. *Saudi Med J 2004*; 25:1825-10.

11. Beerli M, Haramati Z, Rein JJ, Nir A. Parental knowledge and views of pediatric congenital heart disease. *Isr Med Assoc J*. 2001;3:194-7.
12. Minette MS, Sahn DJ. Congenital Heart Disease for the Adult Cardiologist. Ventricular Septal Defects. *Circulation* 2006; 114:2190- 97
13. Eze C, Ezemba N. Open heart surgery in Nigeria; indications and challenges. *Tex Heart Inst J*. 2007; 34:8-10.
14. Caldwell RL, Hurwitz RA, Girod DA. Subacute bacterial endocarditis in children: current status. *Am J Dis Child* 1971; 122:312-5.
15. United Children Emergency Fund. Nigerian children to benefit from UK grant to combat malnutrition. Available at: [http://www.unicef.org/nigeria/media\\_6547.html](http://www.unicef.org/nigeria/media_6547.html). Lasted assessed 10/6/2014
16. Aliyu I, Olugbenga O, Oguntunde I, Dahiru I, Raji T. Prevalence and determinants of malnutrition among Pre-School Children in Northern Nigeria. *Pak J Nutr* 11: 2012;1092- 95.
17. Okoromah CAN, Ekure EN, Ojo OO, et al. Structural heart disease in children in Lagos: profile, problems and prospects. *Niger Postgrad Med J* 2008 ; 15:82 -8 .
18. Varan B, Tokel K, Yilmaz G. Malnutrition and growth failure in cyanotic and acyanotic congenital heart disease with or without pulmonary hypertension. *Arch Dis Child* 1999; 81: 4952-7.