

# PARENTAL KNOWLEDGE OF BACTERIAL ENDOCARDITIS PROPHYLAXIS: A REPORT FROM SOUTHERN IRAN

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## ABSTRACT

We determined the knowledge of parents of 200 pediatric patients for bacterial endocarditis prophylaxis (BEP), using an eight question survey pertaining to their knowledge of their child's cardiac disease, medications, and BEP. The patient's cardiac lesion and current medications were verified at the time of admission for diagnostic or interventional cardiac catheterization. Each patient's need for BEP was determined according to American Heart Association (AHA) recommendations. Eighty-one respondents (40.5%) were high school graduates. Only 12 parents (6%) correctly defined endocarditis. One-hundred and fifty-eight parents (77%) knew the name or condition of their child's cardiac problem, one-hundred (50%) of the families had knowledge of BEP, and only 46 parents (23%) knew that antibiotics are needed for prophylaxis at the time of dental procedures. It is concluded that while most parents know the name of their child's heart lesion and current medications, their knowledge of endocarditis and BEP is limited, and for prevention of such a major complication for pediatric patients with heart diseases, intensified education and awareness programs are needed.

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## INTRODUCTION

Bacterial endocarditis (BE) is still a major cause of morbidity and mortality in patients with congenital heart disease in spite of advances made in the medical and surgical management of such patients. Epidemiologic studies have demonstrated an annual BE incidence of 1 in 1280 to 1 in 4500 pediatric admissions at major North American Medical Centers.<sup>1</sup>

A recent study from the Middle East showed an incidence of 0.2 in 1000 children from 1980 to 1985, and 0.4 in 1000 children from 1986 to 1991.<sup>2</sup> The incidence of BE has been 3.4 per 1000 hospitalized patients in pe-

diatric and internal medicine wards in Shiraz as reported by Borzooe et al.<sup>3</sup>

Prevention of endocarditis is a topic of frequent discussion in emergency rooms, operative theaters, and dental offices. Because endocarditis generally follows bacteremia, prevention as treatment of the bacteremia should decrease the risk of infection. Certain invasive procedures cause bacteremia with organisms known to cause BE. These arguments have made prophylaxis standard treatment in most countries despite the lack of evidence that prophylaxis is effective.<sup>4</sup> In one study from Netherlands, only 10.5% of the patients had undergone a procedure in the past 30 days for which prophylaxis was indicated.<sup>5</sup> Finally endocarditis may occur despite appropriate prophylaxis.<sup>6</sup> Despite these concerns prophylaxis remains the standard of care in most countries using AHA recommendations.<sup>7</sup>

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# Parental Knowledge Concerning Endocarditis Prophylaxis

Families of children with heart disease need to become aware of such preventive measures for BE and must communicate the need for BEP with dental and medical personnel who care for their children. Several studies from Western countries have demonstrated that parents of at-risk children for BE have poor knowledge of endocarditis and prophylaxis and also a report by Cetta et al. revealed that even adult patients with congenital heart diseases who needed BEP also had limited knowledge for such a disastrous complication.<sup>8,9,10</sup>

The goal of our study was to determine current parental knowledge of BEP in our population, with consideration of the high incidence of BE in our area.

## SUBJECTS AND METHODS

Parents of 200 pediatric patients who were admitted for diagnostic or interventional cardiac catheterization at Nemazee Medical Center of Shiraz University, were interviewed with an eight question survey (Table I), pertaining to their knowledge of their child's cardiac disease, current medications, endocarditis prevention and prophylaxis.

A correct definition of endocarditis was accepted with answers such as "infection of the heart" or "infection of the heart valves".

The patients' cardiac lesions and current medications were verified by review of cardiac catheterization data and admission charts. The need of BEP was determined by referring to AHA recommendations.<sup>7</sup>

## RESULTS

Patients' mean age was 4 years and 7 months, median age was 3.5 years, with a range of 36 days to 15 years.

Eighty-one parents (40.5%) had a high-school diploma or were college graduates. Ten (5%) of the patients had a history of bacterial endocarditis and twenty-six (13%) of the patients had palliative or corrective cardiac surgery. One-hundred and fifty-eight parents (77%) knew the name or condition of their child's heart disease. One-hundred and one families (50.5%) knew the need for BEP, 23% of parents knew that antibiotics were needed for prophylaxis at the time of dental procedures, but only 4% were aware of the type of antibiotic needed for such procedures (Table I, II).

## DISCUSSION

There are few studies in the literature from developed countries which have reported poor parental knowledge of endocarditis and prophylaxis despite prior education efforts made by distribution of brochures and wallet cards for their at-risk children for BE.

In 1971 Caldwell et al. reported that 58% of the families with at-risk children who referred to Pediatric Cardiology Clinics at Indiana University had no knowledge of BEP and only 57% of the families that were aware of the necessity for BEP understood why antibiotics were indicated.<sup>11</sup>

**Table I.** Parental knowledge questionnaire.

1. How old is your child?
2. Did you graduate from high school?
3. What is the name of your child's heart condition?
4. What medications does your child take?
5. Has your child ever had endocarditis? Yes/No
6. What is endocarditis?
7. What should you do for your child to prevent endocarditis?
8. If your child needs dental work to be performed, does he/she need to take additional medicine? Yes/No
If yes, what is the name of the medicine?

**Table II.** Parental knowledge of endocarditis prophylaxis in Shiraz, Southern Iran.

Parents correctly defined endocarditis	12	(6%)
Parents knew any measures to prevent endocarditis	100	(50%)
Parents knew antibiotics were needed for dental procedures	46	(23%)
Parents knew the name or condition of their child's cardiac problem	158	(77%)

In 1984 Sholler and Celermajor also reported that 46% of Australian parents with at-risk children had insufficient knowledge of BEP, and factors such as need for regular medications and frequency of hospitalization did not significantly correlate with their knowledge of BEP.<sup>9</sup> In 1993 Cetta et al. reported that while 98% of the parents of at-risk children were high school graduates, only 62% correctly defined endocarditis and 56% knew the measures to prevent endocarditis.<sup>8</sup> In their report, 98% of the parents knew the correct name of their child's cardiac condition. Our data revealed that 50% of parents had sufficient knowledge of BEP and the frequencies of hospitalization, and previous operation did have a significant effect on parental knowledge for BEP ( $p$  values of 0.03 and  $<0.0001$  respectively) (Table III). While in a study by Sholler and Celermajor, only 27% of the parents identified their child's cardiac lesion, in our study 77% of the families knew the name or condition of their child's heart disease.

At Shiraz University Pediatric Cardiology Clinic, BEP brochures are routinely distributed to each new patient and the pediatric cardiologist usually discusses BEP with families. However comparing the results of our study with data from developed countries, it is clear that the parental knowledge for BEP is much more limited in our area, and more intensified efforts should be made to educate parents of such patients. Meanwhile because most of the parents knew the problem and the name of their child's heart disease, more efforts are needed to alert health professionals to ask about the possibility of heart disease in their patients at the time of any procedure which may increase the risk of BE.

In our study the parental knowledge of BEP correlated well with the level of education of the parents, previous hospitalization and operative status. It is apparent that the opportunity to intensify parental awareness for

BEP should be enforced during hospitalization or clinical follow ups. At the same time, parents should be encouraged to educate and explain the need for BEP to their school children with the use of distributed brochures.

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**Table III.** Potential variables affecting parental knowledge of BEP in Shiraz.

Variable	No.	Defined endocarditis	Knew prevention	Knew need for antibiotics
		No. (%)	No. (%)	No. (%)
Age <5y	112	9 (8%)	61 (54%)	27 (24%)
Age 5-10y	54	1 (0.5%)	24 (47%)	17 (33%)
Age 10-15y	34	2 (6%)	19 (56%)	3 (9%)
Previous admission	38	4 (11%)	20 (53%)	14 (40%)
No previous admission	162	8 (5%)	81 (50%)	33 (20%)
				$p=0.03$
Postoperative	26	3 (12%)	14 (54%)	13 (50%)
Unoperated	174	9 (5%)	87 (50%)	35 (20%)
				$p= <0.0001$

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