Assessment of Parents' and Child's Attitude as Barrier to Dietary Compliance in Celiac Disease

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ABSTRACT

Celiac disease is an immune-mediated systemic disorder in genetically susceptible individuals triggered by consuming a protein called gluten, which is found in wheat, barley and rye in genetically susceptible individuals. Classic symptoms include gastrointestinal problems such as chronic diarrhea, abdominal distension, malabsorption, loss of appetite and failure of children to grow normally. The general treatment for celiac disease is a gluten-free diet which entails strict avoidance of all products containing the proteins from wheat, barley and rye. Noncompliance is a major problem and the greatest challenge which the physicians face is in predicting the compliance to the gluten-free diet in children. This study was undertaken to evaluate the impact of celiac disease and the gluten-free diet on the lifestyle and well-being of children with celiac disease and their families, with the aim to identify factors affecting compliance to gluten-free diet and to assess parents' and child's attitude as barrier to dietary compliance in children with celiac disease.

Keywords: Celiac disease, autoimmune disorder, genetic, gluten, compliance to the gluten-free diet

Celiac disease is an immune-mediated systemic disorder elicited by gluten and related prolamins in genetically susceptible individuals and characterized by the presence of a variable combination of gluten-dependent clinical manifestations, celiac disease-specific antibodies, HLA-DQ2 or HLA-DQ8 haplotypes and enteropathy.[1] Recently, the prevalence of celiac disease across the European countries was shown to be 1.5% based on people who had positive biopsy and tissue transglutaminase (tTG) results.[2] In the United States, the overall prevalence of celiac disease in children up to 5 years of age is 1 in 104.[3] This disease is quite prevalent in India also with rates of 1 in 96 in North India.[4] Lifelong adherence to a gluten-free diet is the cornerstone treatment of celiac disease.[5] A gluten-free diet entails strict avoidance of all products containing the proteins from wheat, barley and rye.[6] It is strongly recommended that gluten elimination from diet must be strict and lifelong not only to control symptoms but also to improve quality-of-life and decrease the risk of complications.[7] Although a well-planned gluten-free diet may provide adequate nutrition, it may be restrictive. Strict adherence to gluten-free diet may be more challenging in children and adolescents than in adults. Compliance to gluten-free diet varies from 45% to 81% in children as reported by the North American Society of Pediatric Gastroenterology, Hepatology and Nutrition.[8]

Noncompliance is a major problem and the greatest challenge, which the physicians face is in predicting the compliance to the gluten-free diet in children. Noncompliance may occur due to factors like temptation and not liking the taste of gluten-free diet and alternative food grains.[9] In adolescents, peer pressure, unclear labeling on ready-to-eat food and nonavailability of gluten-free diet at party, marriages, and so forth have contributed to noncompliance.[10] An increasingly hectic lifestyle of teenagers has contributed to a greater reliance on packaged foods which often contain gluten, thus making it inconvenient for them to adhere to restrictive diet.[10] Since parents are usually responsible for food preparation for children, low level of knowledge about the diet in the parents, nonavailability of gluten-free foods and unclear labeling lead to noncompliance in

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children.[11] Many children experience psychological reactions to being placed on a restrictive diet (e.g., feeling deprived, depressed, angry and anxious), which have been found to further decrease compliance.[12] This study evaluates the impact of celiac disease and the gluten-free diet on the lifestyle and well-being of children with celiac disease and their families, with the aim to identify factors affecting compliance to gluten-free diet and to assess parents' and child's attitude as barrier to dietary compliance in children with celiac disease. This study is significant and will contribute to the current body of research by providing healthcare practitioners with information as to what predicts the compliance to gluten-free diet, which may be used to better understand education techniques for dietary instruction so that the children living with celiac disease have less of morbidity and achieve their normal growth potential. Participants will contribute to the understanding of celiac disease and the challenges individuals face with the gluten-free diet.

MATERIAL AND METHODS

The present study was conducted by Dept. of Pediatrics, SMS Medical College and Attached Hospitals, Jaipur, Rajasthan, India. A total number 134 celiac disease children with and parents visiting the gastroenterology super specialty clinic were studied. These children visited the clinic for growth monitoring and compliance assessment. Hundred consecutive children aged between 2 years and 15 years, diagnosed with celiac disease as per revised the European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) criteria for diagnosis of celiac disease 1990,[13] on gluten-free diet for more than 6 months were enrolled in the study after getting the requisite clearance from the Institute Research Review Board. Children less than 2 years and more than 15 years of age, those who did not have a documented positive serology and/or biopsy suggestive of celiac disease as per revised ESPGHAN criteria 1990, those on gluten-free diet for less than 6 months and those children whose parents did not consent to be included in the study were excluded.

All children enrolled in the study, after signing of the written informed consent form, were evaluated for dietary compliance based on a 5-day dietary recall form. A child who had taken even one food article containing gluten in last 5 days was considered noncompliant and those who had strictly taken no gluten in their diet in that period were considered compliant. Diet recall was done by parents for children in preschool age up to 5 years since parents were the only one giving the eatables to these children. Children, above 5 years of age, going to school and interacting with peers, were actively involved in the dietary recall along with the parents. Parents and children in the study group were assessed for dietary compliance followed by a questionnaire based interview. Psychosocial parameters were assessed by standard Pediatric Symptom Checklist (PSC). Dietary compliant and noncompliant groups were compared and assessed for factors affecting the dietary compliance. Predictability of all of these factors was assessed using binary logistic regression analysis with backward elimination to find out the best predictors of compliance.

RESULTS AND DISCUSSIONS

Three types of barriers to compliance were noted. Barriers derived from parent's attitude, those derived from child's attitude and those caused by effect of celiac disease on feelings of children suffering from celiac disease.

Barriers Related to Child's Attitude

Table 1 shows results of assessment of child's attitude as a barrier to compliance to gluten-free diet, 63.08% of children in compliant group found it easy to keep compliance to gluten-free diet 57.14% of children in noncompliant group found it fairly difficult to maintain gluten-free diet. In noncompliant group, 74.29% children found it difficult to maintain gluten-free diet at school; 80% found it difficult to maintain gluten-free diet at family parties and marriages; 62.86% found difficult to comply to diet when with friends. 69.23% in compliant group and 85.79% in noncompliant group found difficulty in complying to diet while traveling.

When they were assessed regarding sharing of responsibility in maintaining gluten-free diet, 66.15% of compliant children were found to be sharing responsibility of keeping the diet, as compared to 28.57% of noncompliant children who shared responsibility of keeping the diet. It was noted that 42.86% of noncompliant children reported the taste of gluten-free diet as bad, while 66.15% of children in compliant group found it very good or good and only 3.08% of compliant children reported food as bad. A statistically significant difference was observed when most of these results were compared.

In the present study, the questionnaire included questions related to child's attitude in response to the disease and gluten-free diet. While 63.08% of children in compliant group found keeping gluten-free diet easy; only 20% of noncompliant children found it easy to maintain a

Table 1. Barriers Related to Child's Attitude

Question	Response	Compliant No. (%)	Noncompliant No. (%)	P value
Finds keeping diet difficult	Difficult	4 (6.15)	8 (22.86)	<0.001
	Fairly difficult	20 (30.77)	20 (57.14)	
	Easy	41 (63.08)	7 (20.00)	
Child shares responsibility	Y	43 (66.15)	10 (28.57)	<0.001
	N	22 (33.85)	25 (71.43)	
Finds taste of gluten-free diet	Bad	2 (3.08)	15 (42.86)	<0.001
	Satisfactory	20 (30.77)	16 (45.71)	
	Good	39 (60.00)	3 (8.57)	
	Very good	4 (6.15)	1 (2.86)	
Finds difficult to maintain diet at school	Y	27 (41.54)	26 (74.29)	<0.001
	N	38 (58.46)	9 (25.71)	
Finds difficult to maintain diet at party/marriage	Y	24 (36.92)	28 (80.00)	<0.001
	N	41 (63.08)	7 (20.00)	
Finds difficult to maintain diet while traveling	Y	45 (69.23)	30 (85.71)	0.814
	N	20 (30.77)	5 (14.29)	
Finds difficult to maintain diet with friends	Y	24 (36.92)	22 (62.86)	<0.001
	N	41 (63.08)	13 (37.14)	

gluten-free diet, while 57.14% of noncompliant children found it fairly difficult and 22.86% children found it difficult to maintain the diet. Our study also found that 66.15% of compliant patients were fairly responsible in maintenance of gluten-free diet as compared to 28.57% in noncompliant group. These results show that compliant patients are more involved in maintenance of their diet. Active involvement of child is significantly related ($p \leq 0.001$) in our study to compliance as in study by Chauhan et al in 2010.[9] In a study by Anson et al (1990), 71% of compliant children's mothers and 44% of noncompliant children's mothers thought that the children shared responsibility in keeping diet.[11]

Barriers Related to Parental Attitude

Table 2 shows 24.62% of parents of children in compliant group hardly felt a burden on their budget, while 94.28% of parents with children in noncompliant group felt a fairly heavy or heavy burden on their budget as compared to 75.38% of parents with children in compliant group who felt a fairly heavy or heavy burden on their budget. It was seen that 87.69% of parents of children in compliant group cooked more than once for their children as compared to 71.43% of parents of children in noncompliant group. In compliant group, 72.31% of parents believed that special diet was hardly a burden to the family, whereas in noncompliant group 57.14% parents felt it as a burden. Also, 36.92% of parents of children in compliant group were not hesitant to discuss the child's condition and were interacting with other parents of celiac disease in gastrology clinics; these parameters were significantly lower in noncompliant group i.e., 14.29%. In compliant group, 64.62% of parents and in noncompliant group, 71.73% of parents believed that the disease will interfere with their child's marriage; 93.28% of parents of children in noncompliant group and 75.38% of parents of children in compliant group also felt a financial burden by gluten-free diet. In noncompliant group, 71.43% of parents cooked more than once for their children as compared to 87.69% of parents with children in compliant group. All these parameters had a significant correlation ($p \leq 0.001$) with compliance and show that noncompliance was most common in parents who consider special diet a burden to budget and family and hence they avoided cooking fresh meals for the children. Hence, cheap and easy to cook food will help this disease bearing families.

Table 2. Barriers Related to Parents' Attitude

Question	Response	Compliant No. (%)	Noncompliant No. (%)	P value
Finds burden on budget	Heavily	12 (18.46)	16 (45.71)	<0.001
	Fairly	37 (56.92)	17 (48.57)	
	Hardly	16 (24.62)	2 (5.71)	
Feels burden on self	Y	18 (27.69)	20 (57.14)	<0.001
	N	47 (72.31)	15 (42.86)	
Cooks food once or more than once	>Once	57 (87.69)	25 (71.43)	<0.001
	Once	8 (12.31)	10 (28.57)	
In contact with other parents of children with celiac disease	Y	24 (36.92)	5 (14.29)	0.012
	N	41 (63.08)	30 (85.71)	
Believe that disease will interfere with child's marriage	Y	42 (64.62)	25 (71.43)	0.225
	N	23 (35.38)	10 (28.57)	

Study by Lee et al in 2003[14] also shows that financial burden of gluten-free food may affect compliance. Anson et al in 1990[11] also showed that 50% of noncompliant group parents considered diet a burden on family's budget. However, this did not significantly affected compliance in their study. In his study, 56% of compliant parents considered special diet a burden; however, compliant and noncompliant parents did not differ significantly with regard to this parameter. In the study by Chauhan et al in 2010,[9] 60.7% of compliant parents believed that special diet was hardly a burden, while 84.6% in noncompliant felt it as a burden. Olsson et al in 2008[15] and Lee et al in 2003,[14] both have shown that availability of cheap gluten-free food was a significant factor affecting compliance. Increase availability of cheap food items is needed for celiac patients.

It was observed that 36.92% of parents of children in compliant group were not hesitant to discuss the condition with others and were able to interact with other parents in the clinic. These rates were 14.29% in noncompliant group, which were significantly lower. This shows that efforts are required on part of healthcare providers to break the stigma among the parents and increase their interaction mutually and with medical faculty to ensure compliance. Rashid et al (2005) reported compliance rates of 95% in those children whose families were a part of celiac support group, Canadian Celiac Association (CCA).[16] These families regarded CCA as the best source for the information provided to them about their child's disease. Hence, this significant association of compliance with the knowledge imparted about celiac disease with the help of celiac support groups and involvement of dieticians and regular follow-up will definitely improve compliance to the gluten-free diet.

Barriers Related to Child's Feelings

In the present study, 47.69% of the compliant children never felt left out of the activities at school, while only 22.86% of noncompliant children never felt left out of the activities at school. Also, 14.28% of noncompliant children and 7.69% of compliant children believed that their teacher and friends didn't understand the disease all or most of the time; 45.72% of noncompliant children and 3.08% of complaint children felt different from other kids because of disease. It was seen that 72.31% of compliant children were not having any problem in bringing gluten-free diet to school, parties while in noncompliant group this was true for 28.57% only, 62.86% felt embarrassed to bring gluten-free diet at parties. When they were inquired about their social life and asked to grade it, 9.23% children in compliant group believed that they were left out of activities at school or friends' home due to their disease all or most of the time while 48.57% children in noncompliant group believed that they were left out of activities at school or at friends' home all or most of the time. In noncompliant group, 2.86% felt different from others all the time while 42.86% felt different most of the times as compared to 0% and 3.08%, respectively in the compliant group. Due to their disease; feeling of embarrassment of bringing gluten-free diet to parties was higher in noncompliant group as compared to compliant group i.e., 80% and 27.69%, respectively Table 3.

Table 3. Barriers Related to Child's Feelings

	Compliant group No. (%)					Noncompliant group No. (%)					P value
	A	B	C	D	E	A	B	C	D	E	
Feel left out of activities at school or friends home	0 (0.00)	6 (9.23)	27 (41.54)	31 (47.69)	1 (1.54)	1 (2.86)	16 (45.71)	10 (28.57)	8 (22.86)	0 (0.00)	<0.001
Felt different from other kids	0 (0.00)	2 (3.08)	24 (36.92)	39 (60.00)	0 (0.00)	1 (2.86)	15 (42.86)	10 (28.57)	9 (25.71)	0 (0.00)	<0.001
Felt embarrassed to bring gluten-free foods to parties	1 (1.54)	6 (9.23)	11 (16.92)	47 (72.31)	0 (0.00)	3 (8.57)	15 (42.86)	4 (11.43)	10 (28.57)	3 (8.57)	<0.001
Felt angry about following a special diet	0 (0.00)	12 (18.46)	39 (60.00)	14 (21.54)	0 (0.00)	14 (40.00)	8 (22.86)	10 (28.57)	3 (8.57)	0 (0.00)	<0.001
Felt their teacher and friends didn't understand the disease	0 (0.00)	5 (7.69)	13 (20.00)	42 (64.62)	5 (7.69)	2 (5.71)	3 (8.57)	12 (34.29)	15 (42.86)	3 (8.57)	<0.001
Felt that they can be healthy without following a special diet	1 (1.54)	1 (1.54)	20 (30.77)	43 (66.15)	0 (0.00)	6 (17.14)	8 (22.86)	14 (40.00)	7 (20.00)	0 (0.00)	<0.001
Avoid restaurants	33 (50.77)	17 (26.15)	6 (9.23)	6 (9.23)	3 (4.62)	18 (51.43)	8 (22.86)	2 (5.71)	2 (5.71)	5 (14.29)	0.171
Avoid traveling	23 (35.38)	33 (50.77)	8 (12.31)	1 (1.54)	0 (0.00)	20 (57.14)	5 (14.29)	3 (8.57)	7 (20.00)	0 (0.00)	<0.001
Found difficult to determine which food is gluten-free	8 (12.31)	17 (26.15)	32 (49.23)	8 (12.31)	0 (0.00)	16 (45.71)	10 (28.57)	6 (17.14)	2 (5.71)	1 (2.86)	<0.001
Felt they were no invited out	1 (1.54)	6 (9.23)	9 (13.85)	40 (61.54)	9 (13.85)	4 (11.43)	1 (2.86)	3 (8.57)	18 (51.43)	9 (25.71)	0.002

A = All the time; B = Most of the time; C = Some of the time; D = Never; E = Not answered.

Feeling of anger for following special diet was also higher in noncompliant group as compared to compliant group i.e., 91.43% and 78.46%, respectively, 21.54% never felt angry to follow gluten-free diet in compliant group, while this count is 8.57% in noncompliant group who never felt angry to follow gluten-free diet. In compliant group, 66.15% of children understood the importance of following a gluten-free diet and never felt that they can be healthy without following a special diet while in noncompliant group only 20% understood this. Also, 74.28% children in noncompliant group had problems all or most of the times in identifying the gluten-free food stuff as compared to 38.46% in compliant group who had this problem all or most of the time; 72.31% in compliant group believed that their teachers and friends understood the nature of their disease compared to 51.43% in noncompliant group; 10.77% in compliant group always or most of the time felt that they were not invited for meals outside because of the disease, while 14.29% in noncompliant group believed so all or most of the time. Most of all, these questions showing the perception of the child about the disease and gluten-free diet significantly affected compliance ($p \leq 0.001$).

School Environment

While only 41.54% of compliant patients mentioned that it was difficult for them to maintain compliance at school, 74.29% of noncompliant patients found it difficult to maintain diet at school. Rashid et al (2005) also reported >50% of children felt left out of activities at school and had problems related to compliance.[16] Olsson et al in 2008 showed that for adolescents, school was the most difficult place to comply with gluten-free diet.[15] Other children bringing mainly gluten containing

foods and peer pressure about taking packed food items containing gluten were responsible for difficulty in maintaining compliance at school.

Family Party and Marriages

Noncompliant children also found it difficult to maintain gluten-free diet at family party/marriages (80%), compared to 36.92% in the compliant group. Gluten containing food as the main dietary item served at above places was a problem for both compliant and noncompliant groups who had problems in maintaining diet at such places. Anson et al (1990) have also reported nonavailability of food at party/marriages as barriers to compliance to gluten-free diet.[11]

Traveling

While traveling, majority number of children in both compliant group (69.23%) and noncompliant group (85.71%) face problems with maintaining special diet. This shows the need of easily available packed gluten-free diet and properly labeled as being gluten-free for on-the-go consumption.

Taste of Gluten-free Diet

In response to question related taste of gluten-free food, 66.15% of compliant patients graded taste of gluten-free diet to be very good or good, while only 11.43% in noncompliant group graded it to be good or very good. Child's liking taste of gluten-free diet is significantly associated with compliance ($p \leq 0.001$). Butterworth et al (2004) have also reported better compliance in patients who were frequently explained and educated by dieticians regarding selection and preparation of gluten-free meals to improve the taste of the meals.[17] These results highlight importance of counseling and education of parents and children in selecting and preparing gluten-free foods. Parents should be taught about preparing palatable, easily available gluten-free foods for their children.

In our study, 18.46% of complaint and 62.86% of noncompliant children felt angry about having to follow a special diet all or most of the time, while 66.15% of compliant and only 20% of noncompliant children never believed that they can be healthy without following a special diet. We also found that majority of both compliant children (86.15%) and noncompliant children (71.43%) avoided traveling because of the fact that gluten-free diet is not easily available. Rashid et al (2005) also studied the effect of child's feeling on compliance to gluten-free diet. In their study, 13% of compliant children felt left out of school activities due to their disease and 11% of compliant children felt that their teacher did not understand their disease. While 18% children felt themselves different from other kids, 23% were embarrassed to bring gluten-free food to parties. In his study, 23% children felt angry about having to follow a special diet.[16] These results indicate that these dietary restrictions have significant impact on child's social activities including school and extracurricular events. It affects their participation in school, parties and enjoyable social activities such as birthday parties. Non- availability of gluten-free items in restaurants and during travel made them to avoid it. The acceptance of diet was better in children in the study by Rashid et al as compared to those in our study which may be because of support provided by the CCA, the celiac support group which makes the children more comfortable with their condition and made them accept the diet better and hence the role of support groups re-emphasized.[16]

Psychosocial Problem Related to Noncompliance

In our study, the mean score is increasing as the age increases in the children suffering from celiac disease in both compliant and noncompliant patients. Hence, an older child is at more risk of noncompliance.

CONCLUSIONS

These results will contribute to the current body of research by providing healthcare practitioners with a framework for better dietary instructions to ensure maximum adherence to gluten-free diet.

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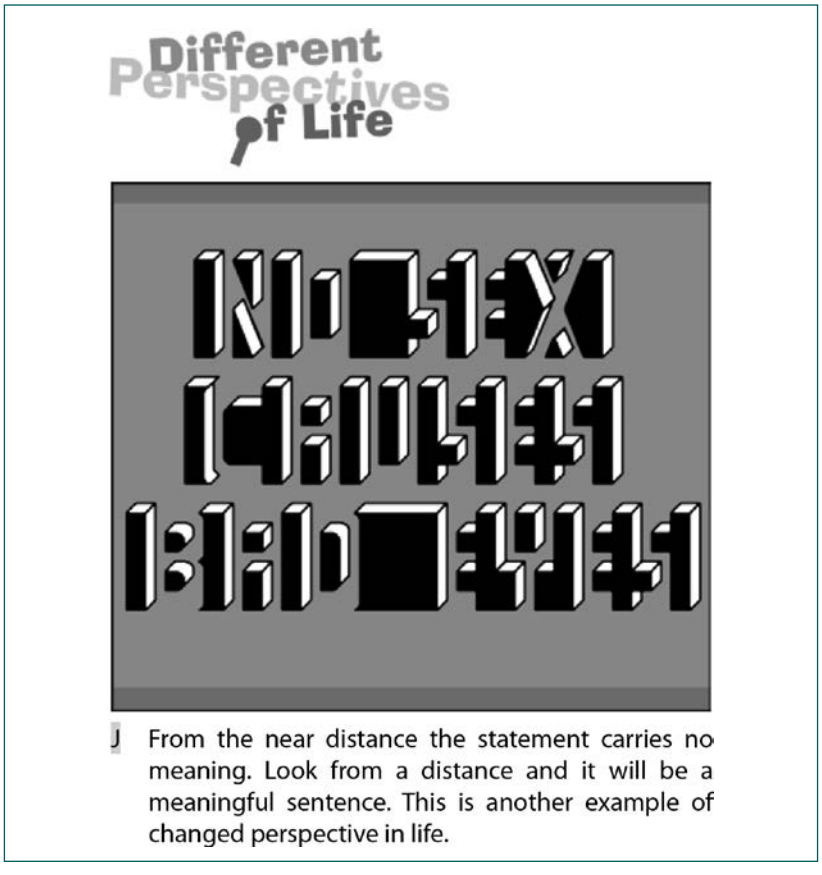

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- Assist heart patients belonging to economically weaker sections of the society in getting affordable and quality treatment.
- Raise awareness about the fundamental right of individuals to medical treatment irrespective of their religion or economical background.
- Sensitize the central and state government about the need for a National Cardiovascular Disease Control Program.
- Encourage and involve key stakeholders such as other NGOs, private institutions and individual to help reduce the number of deaths due to heart disease in the country.
- To promote heart care research in India.
- To promote and train hands-only CPR.

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- The patient must be needy and underprivileged, to be assessed by Fund Committee.
- The HCFI Fund reserves the right to accept/reject any application for financial assistance without assigning any reasons thereof.
- The review of applications may take 4-6 weeks.
- All applications are judged on merit by a Medical Advisory Board who meet every Tuesday and decide on the acceptance/rejection of applications.
- The HCFI Fund is not responsible for failure of treatment/death of patient during or after the treatment has been rendered to the patient at designated hospitals.
- The HCFI Fund reserves the right to advise/direct the beneficiary to the designated hospital for the treatment.
- The financial assistance granted will be given directly to the treating hospital/medical center.
- The HCFI Fund has the right to print/publish/webcast/web post details of the patient including photos, and other details. (Under taking needs to be given to the HCFI Fund to publish the medical details so that more people can be benefitted).
- The HCFI Fund does not provide assistance for any emergent heart interventions.

Check List of Documents to be Submitted with Application Form

- Passport size photo of the patient and the family
- A copy of medical records
- Identity proof with proof of residence
- Income proof (preferably given by SDM)
- BPL Card (If Card holder)
- Details of financial assistance taken/applied from other sources (Prime Minister's Relief Fund, National Illness Assistance Fund Ministry of Health Govt of India, Rotary Relief Fund, Delhi Arogya Kosh, Delhi Arogya Nidhi), etc., if anyone.

Free Diagnostic Facility

The Fund has installed the latest State-of-the-Art 3 D Color Doppler EPIQ 7C Philips at E – 219, Greater Kailash, Part 1, New Delhi.
This machine is used to screen children and adult patients for any heart disease.

Free Education and Employment Facility

HCFI has tied up with a leading educational institution and an export house in Delhi NCR to adopt and to provide free education and employment opportunities to needy heart patients post surgery. Girls and women will be preferred.

Laboratory Subsidy

HCFI has also tied up with leading laboratories in Delhi to give up to 50% discounts on all pathological lab tests.

Help Us to Save Lives

The Foundation seeks support, donations and contributions from individuals, organizations and establishments both private and governmental in its endeavor to reduce the number of deaths due to heart disease in the country. All donations made towards the Heart Care Foundation Fund are exempted from tax under Section 80 G of the IT Act (1961) within India. The Fund is also eligible for overseas donations under FCRA Registration (Reg. No 231650979). The objectives and activities of the trust are charitable within the meaning of 2 (15) of the IT Act 1961.

Donate Now...

About Heart Care Foundation of India

Heart Care Foundation of India was founded in 1986 as a National Charitable Trust with the basic objective of creating awareness about all aspects of health for people from all walks of life incorporating all pathies using low-cost infotainment modules under one roof.

HCFI is the only NGO in the country on whose community-based health awareness events, the Government of India has released two commemorative national stamps (Rs 1 in 1991 on Run For The Heart and Rs 6.50 in 1993 on Heart Care Festival- First Perfect Health Mela). In February 2012, Government of Rajasthan also released one Cancellation stamp for organizing the first mega health camp at Ajmer.

Objectives

- Preventive Health Care Education
- Perfect Health Mela
- Providing Financial Support for Heart Care Interventions
- Reversal of Sudden Cardiac Death Through CPR-10 Training Workshops
- Research in Heart Care

Heart Care Foundation Blood Donation Camps

The Heart Care Foundation organizes regular blood donation camps. The blood collected is used for patients undergoing heart surgeries in various institutions across Delhi.

Committee Members

Chief Patron

Raghu Kataria

Entrepreneur

President

Dr KK Aggarwal

Padma Shri, Dr BC Roy National & DST National Science Communication Awardee

Governing Council Members

Sumi Malik
Vivek Kumar
Karna Chopra
Dr Veena Aggarwal
Veena Jaju
Naina Aggarwal
Nilesh Aggarwal
H M Bangur

Advisors

Mukul Rohtagi
Ashok Chakradhar

Executive Council Members

Deep Malik
Geeta Anand
Dr Uday Kakroo
Harish Malik
Aarti Upadhyay
Raj Kumar Daga
Shalin Kataria
Anisha Kataria
Vishnu Sureka
Rishab Soni

This Fund is dedicated to the memory of **Sameer Malik** who was an unfortunate victim of sudden cardiac death at a young age.

- HCFI has associated with Shree Cement Ltd. for newspaper and outdoor publicity campaign
- HCFI also provides Free ambulance services for adopted heart patients
- HCFI has also tied up with Manav Ashray to provide free/highly subsidized accommodation to heart patients & their families visiting Delhi for treatment.

http://heartcarefoundationfund.heartcarefoundation.org