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ASSESSMENT OF THE KNOWLEDGE OF SCHOOLS AND PARENTS ABOUT TREATMENT OF ANAPHYLAXIS AFFECTED CHILDREN

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Abstract:

Background: *Allergies significantly affect the quality of life and it has also become a grave concern of the healthcare department in terms of its treatment cost which requires a suitable treatment plan.*

Objective: *The objective of this research is to compare perception and knowledge of school and families about child care with anaphylaxis history and prescribed with epinephrine auto-injector (EpiPen). We also assessed the possible reasons of knowledge gap among school and families about various aspects of EpiPen.*

Patients and Methods: *This cross-sectional research was carried out at Mayo Hospital, Lahore from August 2018 to June 2019 on a total of 50 schools and 128 families where children were likely endangered with anaphylaxis and they were also prescribed EpiPen. The basic objective of the study aimed at the identification of deficiency of knowledge among schools and families about the reasons contributing to the knowledge gap.*

Results: *Among total selected families and schools, 30 schools did not inform the parents about the health of the students who were at the risk of anaphylaxis. More importantly, 113 families (88%) and 42 schools (84%) failed to recognize related symptoms of anaphylaxis. Moreover, 67 families (52%) and 22 schools (44%) did not confirm that child should be given two EpiPen in severe allergic situation. EpiPen was administered by 18 families (14%) and 5 schools (6%).*

Conclusion: *Schools and families should discuss anaphylaxis, its symptoms and related treatment. Both schools and families did not possess key information about the management of severe allergy. In order to manage child at anaphylaxis risk; there is a crucial need for communication between schools, healthcare professionals and families. Emergent steps are to be taken to educate schools and families about various aspects and possible treatment opportunities about management of anaphylaxis.*

Keywords: *Allergy, Healthcare, Schools, Families, Parents, Students, Epinephrine Auto-Injector (EpiPen), Symptoms and Treatment.*

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INTRODUCTION:

There is a prevalence of allergies among children which varies from (3% – 6%) and poses a serious concern to the healthcare providers [1]. Peanut related allergy is at an increase which is commonly reported in the emergency departments of the hospitals. Allergy induced anaphylaxis requires effective and timely administering of EpiPen which can save the lives of children. A recent survey conducted in schools reported the use of EpiPen (55%) without any identification of previous allergy risks while attending schools [2]. The primary focus was put on the knowledge about anaphylaxis and its treatment by schools and parents. Research showed that 53% schools were reported by healthcare professionals about anaphylaxis history [3]. Other issues related to the management of anaphylaxis such as EpiPen availability, knowledge gap and related aspects were also studied in different series [4 – 7]. Schools and families require formal training about the management of allergy developed at school or at home [8, 9]. Effective communication also plays an important role in the education of schools and parents [10]. As we know, no research has been conducted to assess the knowledge about EpiPen and anaphylaxis among children with anaphylaxis history in such a populous city. Allergies significantly affect the quality of life and it has also become a grave concern of the healthcare department in terms of its treatment cost which requires a suitable treatment plan. The objective of this research is to compare perception and knowledge of school and families about child care with anaphylaxis history and prescribed with epinephrine auto-injector (EpiPen). We also assessed the possible reasons of knowledge gap among school and families about various aspects of EpiPen.

METHODOLOGY:

This cross-sectional research was carried out at Mayo Hospital, Lahore from August 2018 to June 2019 on a total of 50 schools and 128 families where children were likely endangered with anaphylaxis and they were also prescribed EpiPen. The basic objective of the study aimed at the identification of deficiency of knowledge among schools and families about the reasons contributing to the knowledge gap. Details of children were taken from schools and families. We also inquired about the person who was dealing with the health of the children. Those who did not respond in three tries were not included in the research. All those children of schools and families were included in the research who were in the age bracket of (1 – 14) years along with positive anaphylaxis history and who were also prescribed with EpiPen. Questions were asked through telephone in language which was best understood by the respondents (questions with possible responses are given in Table – I). The questions included variables like demographic details, anaphylaxis, allergy-related and EpiPen related questions. The target outcomes included knowledge about the definition of anaphylaxis, use of EpiPen, knowledge gap, anaphylaxis treatment and identification along with communication between schools and families. SPSS software was used for statistical analysis of outcomes (P-Value < 0.05).

RESULTS:

Among the total selected families and schools, 30 schools did not inform the parents about the health of the students who were at the risk of anaphylaxis. More importantly, 113 families (88%) and 42 schools (84%) failed to recognize related symptoms of anaphylaxis. Moreover, 67 families (52%) and 22 schools (44%) did not confirm that child should be given two EpiPen in severe allergic situation. EpiPen was administered by 18 families (14%) and 5 schools (6%). The detailed outcomes analysis of areas of interview questions with possible choices, knowledge-related responses and comparison of knowledge: families versus schools has been given in the tabular and graphical data.

Table – I: Areas of interview questions with possible choices

Q. No	Statement	A	B	C	D
1	Reason for EpiPen prescription	Yes	No		
2	Child's Age (Years)	1 to 3	3 to 6	6 to 9	9 to 14
3	Child's Gender	Male	Female		
4	Child's Nationality	Pakistani	Non-Pakistani		
5	Anaphylaxis definition (Severe allergic, instant, prompt use of EpiPen)	Correct	Incorrect		
6	Type of Allergy	Food	Medications	Bee/Ant Sting	Unknown/Multiple allergies
7	Food causing allergy	Nut	Egg	Fish	Unknown/Multiple foods
8	What kind of nut causes allergy	Peanuts	Pistachios	Cashews	Unknown/Multiple nuts
9	EpiPen first prescription (months)	0 to 3	3 to 6	Above 6	
10	Use of EpiPen after prescription	Never	Once	Twice	Thrice
11	Who prescribed EpiPen	Paediatrician	Allergy/ Immunology	Both	
12	Where you received the first prescription of EpiPen	Emergency Dept	OPD	Both	
13	Have you never received instructions about EpiPen use	Yes	No		
14	Who gave the instructions about EpiPen usage	Physician	Non-physician		
15	Where did you receive the instructions about the use of EpiPen	Emergency Dept	OPD	Both	
16	Symptoms for EpiPen use	Cardiorespiratory	Non-cardiorespiratory		
17	Storage temperature of EpiPen	Room Temp	Refrigerator		
18	Quantity of EpiPen	One	Two	Three or more	
19	Where to keep EpiPen	At home	Carry all times	At school	
20	Checking of Expiry Date of EpiPen	Yes	No	N/A	
21	Correct Steps of usage (Pull safety, mid-thigh, push medicine, remove EpiPen)	Correct	Incorrect		
22	Would you wait for symptoms or use EpiPen without symptoms	Immediate Use	Wait for symptoms		
23	Removal of child's clothes before EpiPen administration	Yes	No		
24	Emergency Department visit is required after using EpiPen	Yes	No		

Table – II: Knowledge-related responses

Knowledge-related response	Family		School		P-Value
	No	%	No	%	
Anaphylaxis definition (Severe allergic, instant, prompt use of EpiPen) True	108	85	35	71	0.02
Use of EpiPen after prescription (Never)	110	86	43	94	0.5
Use of EpiPen after prescription (Once or more)	18	14	5	6	
Have you never received instructions about EpiPen use (Yes)	118	92	37	75	0.002
Who gave the instructions about EpiPen usage (Physician)	103	87	17	46	0.001
Who gave the instructions about EpiPen usage (Non-physician)	15	13	20	54	
Mode of instruction (Verbal)	75	64	28	76	0.01
Use of EpiPen (Cardiorespiratory symptoms)	15	12	8	16	0.4
Use of EpiPen (Non-cardiorespiratory symptoms)	113	88	42	84	
Storage temperature (Room temperature)	111	87	35	70	0.01
Storage temperature (in refrigerator)	17	13	14	29	
Number of EpiPen (One)	37	29	13	26	0.2
Number of EpiPen (Two)	67	52	22	44	
Number of EpiPen (Three or more)	24	19	15	30	
Keeping of EpiPen by caregiver (at home)	32	25	16	32	0.01
Keeping of EpiPen by the caregiver (carry all times)	83	65	22	44	
Keeping of EpiPen by the caregiver (at school)	13	10	12	24	
Checking of Expiry date (Yes)	105	82	25	83	0.9
EpiPen injecting sequence (Correct)	79	62	32	67	0.6
Use of EpiPen (Immediate)	67	52	21	44	0.3
Use of EpiPen (Wait for complete symptoms to completely appear)	61	48	27	56	
Removal of Child's clothes (No)	81	63	32	65	0.8
Requirement of Emergency Department (Yes)	117	91	34	68	0.009

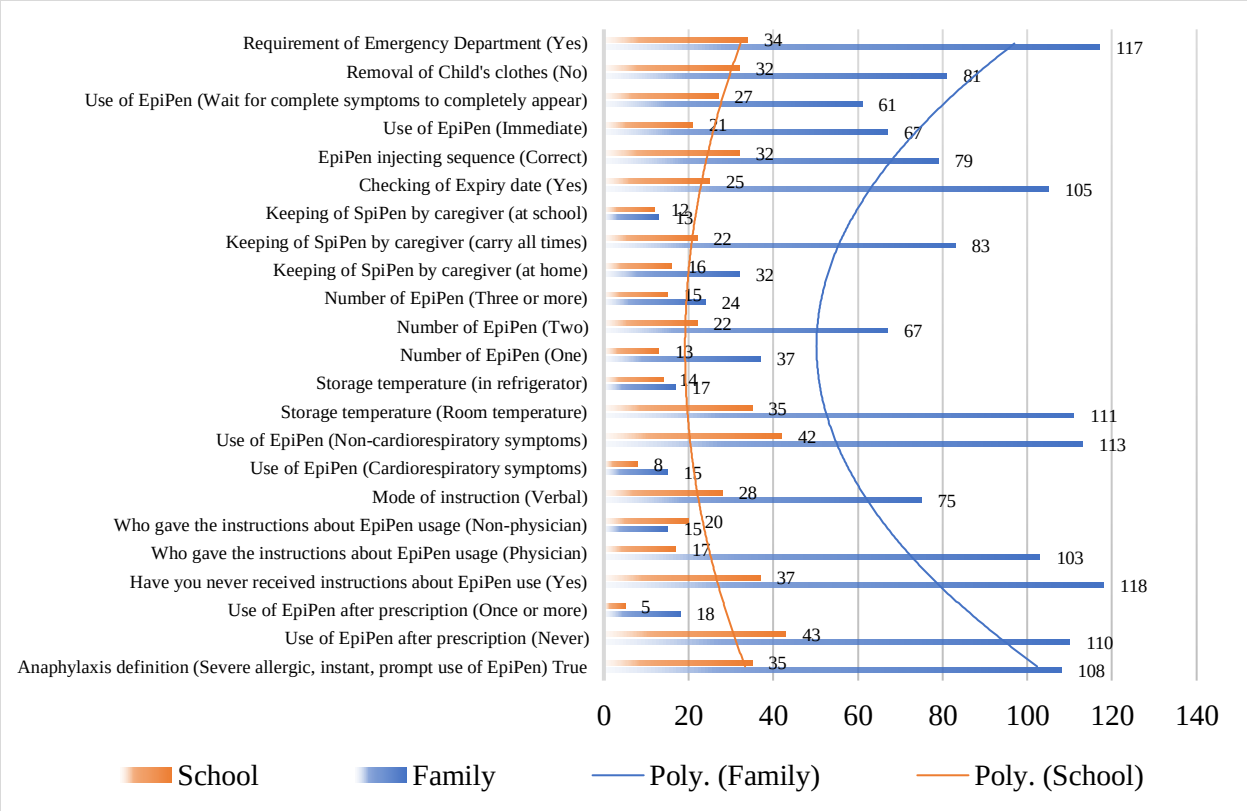
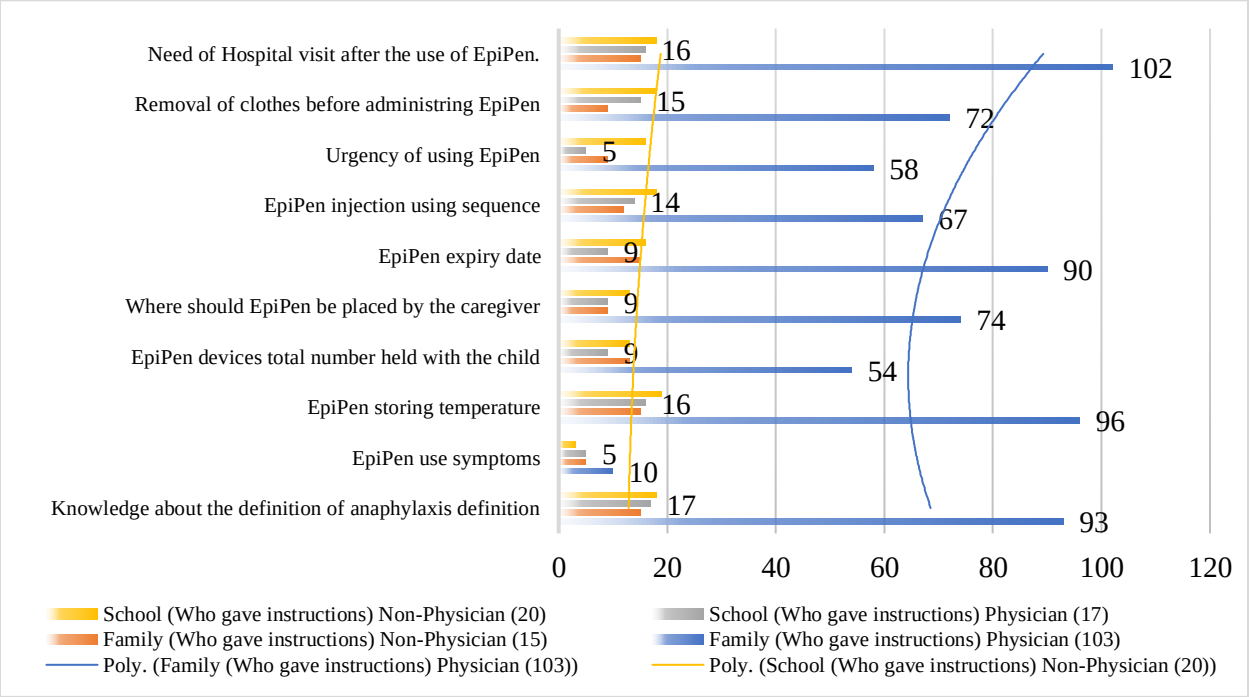


Table – III: Comparison of knowledge: families versus schools

Q. No	Statement	Family (Who gave instructions)					School (Who gave instructions)				
		Physician (103)		Non-Physician (15)		P-Value	Physician (17)		Non-Physician (20)		P-Value
		No	%	No	%		No	%	No	%	
1	Knowledge about the definition of anaphylaxis definition	93	90	15	100	0.2	17	100	18	90	0.18
2	EpiPen use symptoms	10	10	5	33	0.01	5	29	3	15	0.2
3	EpiPen storing temperature	96	93	15	100	0.2	16	94	19	95	0.9
4	EpiPen devices total number held with the child	54	52	13	62	0.01	9	53	13	65	0.4
5	Where should EpiPen be placed by the caregiver	74	72	9	60	0.3	9	53	13	65	0.4
6	EpiPen expiry date	90	87	15	100	0.1	9	53	16	53	0.07
7	EpiPen injection using sequence	67	65	12	57	0.2	14	82	18	90	0.4
8	Urgency of using EpiPen	58	56	9	60	0.7	5	30	16	80	0.001
9	Removal of clothes before administering EpiPen	72	70	9	60	0.4	15	88.2	18	90	0.8
10	Need of Hospital visit after the use of EpiPen.	102	100	15	100	0.7	16	94.1	18	90	0.6



DISCUSSION:

The outcomes of our research are notable in several aspects which include observations about pupil's history, knowledge of schools and families, use of EpiPen and management of anaphylaxis. Surprisingly, there were 8 schools (16%) where injections were banned by the administration of the school. No knowledge was available about the twice administration of EpiPen by schools and families for severe cases. Symptoms were also not known to families and school personnel which may lead to the administration of EpiPen to counter the triggering of anaphylaxis. Both schools and families also lacked in knowledge of various other aspects of anaphylaxis management. This research was first of its kind. We also aimed to identify related factors which include knowledge gaps, instructions and role of healthcare providers about the administering of EpiPen. The level of communication between schools and parents was an alarming aspect which needs special focus.

The knowledge about the definition of anaphylaxis was satisfactory along with the awareness about the use of EpiPen in comparison to other areas of the research; whereas, knowledge was not satisfactory [12]. Symptoms were not well identified with suspicion about the administering time of EpiPen along with the ideal number of EpiPen to children with anaphylaxis history [13 – 15]. We reported that 79 families (62%) possessed sufficient knowledge about EpiPen usage than another research where knowledge was reported about 32% [16]. Allergists were less prescribing EpiPen than paediatricians. It is important to build collaboration between families and allergist for better outcomes [17].

Schools and families underused EpiPen which is an immediate life-saving treatment [18, 19]. There is a need to improve the availability of EpiPen in schools and educate the administration about the importance of EpiPen. Studies also show mixed opinion of underuse of EpiPen due to over is under-prescription [20, 21]. EpiPen cannot save lives when it is underused, too late use or if it is not carried all the times [22]. The family was more aware than the school staff because of receiving more instructions than school staff. It is crucial to receive instructions from physicians.

Morris observed 171 non-physician staff and reported that due to a lack of guidelines and policies only 13% staff underwent epinephrine stock courses [21]. There were also fewer awareness campaigns to educate schools. Therefore, this research along with other works highlight the importance of spread of awareness and knowledge about identification and treatment of anaphylaxis through effective use of EpiPen.

CONCLUSION:

Schools and families should discuss anaphylaxis, its symptoms and related treatment. Both schools and families did not possess key information about the management of severe allergy. In order to manage child at anaphylaxis risk; there is a crucial need for communication between schools, healthcare professionals and families. Emergent steps are to be taken to educate schools and families about various aspects and possible treatment opportunities about management of anaphylaxis.

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