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RESEARCH ARTICLE

EFFECT OF TONSILLECTOMY ON CHILDREN'S GENERAL HEALTH.

Aljuaid A. Aljwharah, Almalki S. Mona, Alalawi M. Samaher and Alotaibi H. Shog.
Department of medicine, faculty of medicine, Taif university, Saudi Arabia.

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Abstract

Background: In children, tonsillar disease is one of the common causes of primary care visit to physicians and the choice of treatment is often tonsillectomy. **Objective:** The research aimed to find out the difference of the immunity in children before and after tonsillectomy in Taif city. **Method**: A cross sectional study by random sample on children from Taif city. The questionnaire identifies knowledge of the leading causes of tonsillitis and methods of treatment and the reasons leading to the tonsillectomy. All data has been statistically analysis to specify a recommended answer. The answers were scored; frequencies and percentages were used for describing data. Chi-square test and a P value of (0.05) were used to determine the significant association between the participants' variables. **Result :** The highest percentage of children with tonsillitis are in the age group (6-9) years old in percent of 35 % , the recurrence of tonsillitis for 4-6 times or up than six and it's long duration is the most common causes of tonsillectomy, 91.4% of parents feel that the surgery was good and have a clear influence on their children's health. **Conclusion:** Participants had poor knowledge about the effect of tonsillectomy on children's immunity, the tonsillectomy reducing the frequency and severity of sore throats, and does not get rid of sore throats altogether.

Introduction:-

Our bodies consist of several of biological systems that carry out specific functions necessary for our lives [(1)], each system made up of special organs, tissues, and cells. One of the most critical systems is the immune system which is the defense system in the body [(2)] ; it is made up of organs, tissues, and cells that work together to protect the body against bacteria, viruses, fungi, pathogens and all other toxins in our environment [(3)].

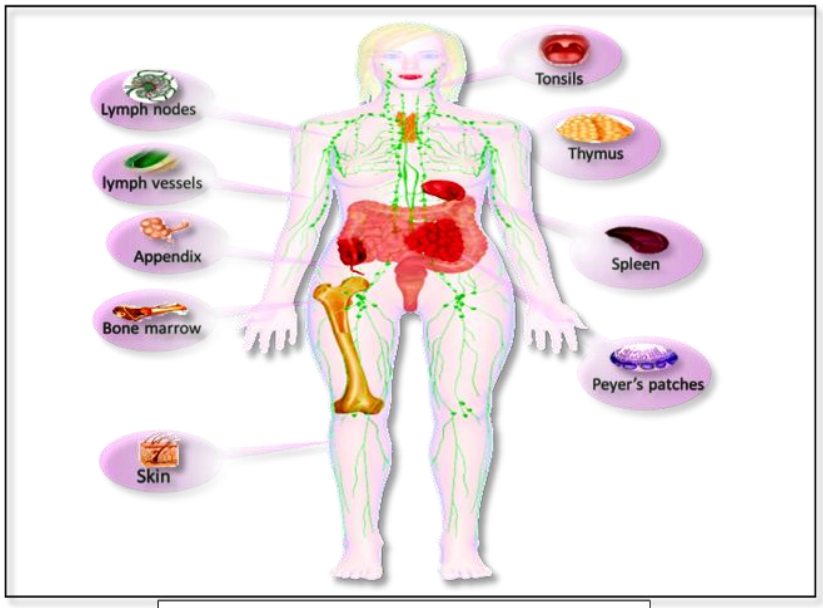


Fig. (I-I) , Organs of the immune system

Innate and Adaptive immunity are the two systems that the immunity system works through[4].
Innate immunity system refers to nonspecific defense mechanisms that come into play immediately or within hours of an antigen's appearance in the body [5]. These mechanisms include physical barriers such as skin, flushing action of urine and tears, saliva, mucous membrane, stomach acidity, and WBC's; that attack foreign cells in the body [6]. The innate immune response is activated by chemical properties of the antigen [7] .

While the Adaptive " acquired " immunity refers to antigen-specific immune response [8] .It is more sophisticated than the innate immune system [9] . However, The acquired immune system stimulated by the innate immune system. After the pathogen pass through the first defense line " which is innate immune system " the acquired immunity learn how to attack and destroy the foreign particle.

The pathogen first must be recognized and processed, Once a pathogen has been identified, the adaptive immune system creates an army of immune cells carrying an antigen specifically designed to attack that pathogen. It also has a memory that encodes, stored and retrieves the responses against a that pathogen and makes future responses for it more efficient [10] .
The B cells and the T cells are mainly the cells of the acquired immune system, which is produced by lymph nodes [11] .

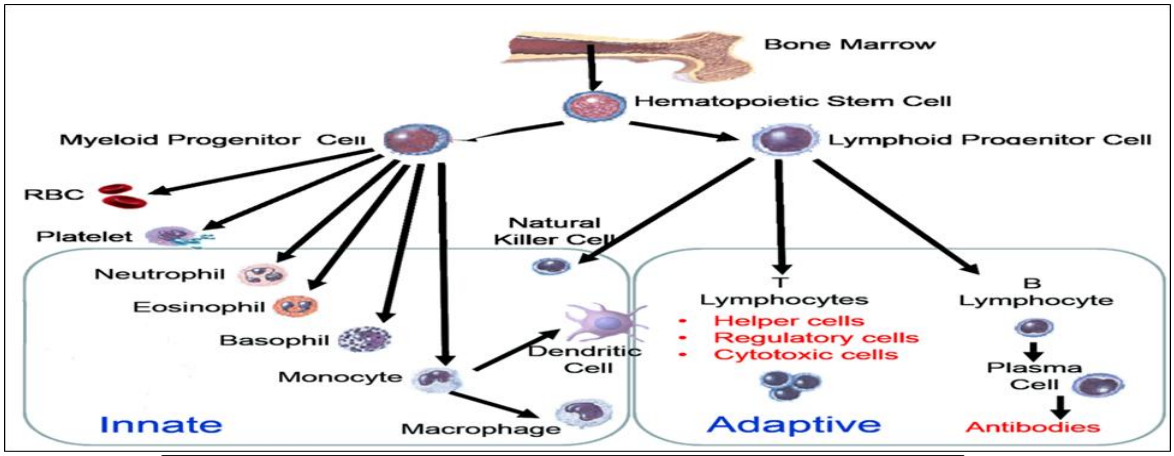


Fig.(I-II) . Innate and Adaptive immunity [12]

One of the most important lymph nodes are the tonsils. Tonsils are the first line defense of the immune system against inhaled and swallowed pathogens [13] . It's consist of a collection of lymph tissue; it is pair soft lymphatic tissue located rear of the throat [14] .

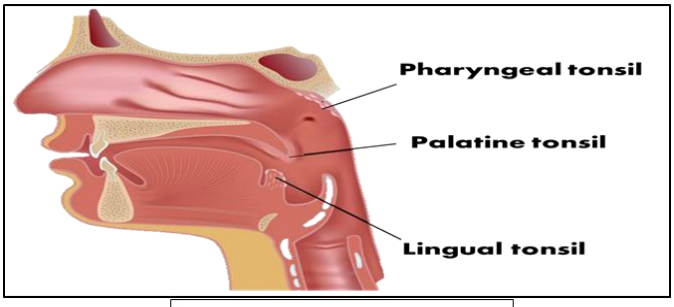


Fig. (I-III) Tonsils [15]

Tonsils are filtering and trapping germs that could enter the airway and cause infection [16] . Since they are part of the immune system tonsils produces an antibodies to fight the infection .However , sometimes the tonsils themselves become infected. Overwhelmed by bacteria or viruses [17] , they swell and become inflamed, a condition known as tonsillitis . The most Vulnerable category for tonsillitis are the children [18] .

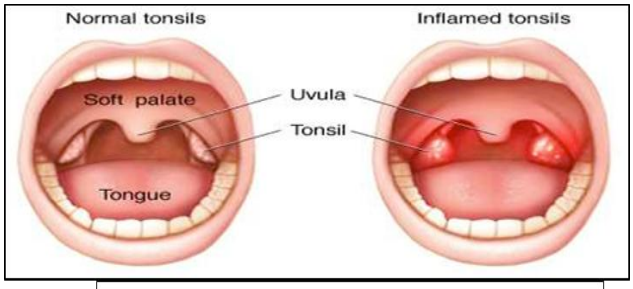


Fig. (I-VI) . Normal and inflamed Tonsils [19]

When tonsillitis occur organisms multiply within and on tonsils , cause exceeding in the protective potency of activated lymphoid and immunoglobulin-producing cells [20] . Some of the infectious agents are part of the normal flora of the oropharynx and, because of this, most infections are polymicrobial [21]. However , Many organisms can induce tonsillitis.

These include bacteria, viruses, yeasts, and parasites (TABLE I-I).

Pathogen	Example
Aerobic bacteria	Streptococcus pneumonia, Staphylococcus aureus, Haemophilus influenzae, Corynebacterium diphtheriae, GAS, GBS, GCS,GGS , Mycobacterium species, Bordetella pertussis, Neisseria gonorrhoeae
Anaerobic bacteria	Actinomyces species , Bacteroides species
Viruses	Adenovirus , Herpes-simplex virus , Influenza virus , Rhinovirus , Coxsackie virus , Cytomegalovirus , Respiratory syncytial viruses , Epstein-Barr virus
Fungi	Candida species

Table (I-I) . Pathogens that cause Tonsillitis [22].

When tonsils be inflamed accompanied with several symptoms, A sore throat which is the most common symptom. Also, cough, fever, chills , headache, earache , tired feeling , swallowing pain [23] , difficulty in breathing , Swollen glands in the neck or jaw area , A white or yellow coating on the tonsils ,Painful blisters or ulcers on the throat [24] , Hoarseness or loss of voice , some children may also have nausea , vomiting and abdominal pain [25] .

Treatment of tonsillitis depends on many factors the most significant one is the cause of the infection bacterial, viral or fungal [26] .

The doctor first takes from child's parent some information about patient illness history, such as presence of fever, cold or flu (influenza) , if he/ she taking any medicines. Then he will take the patient medical history or if he / she have any other medical condition like asthma , then he will chick the child's throat and feel the sides of his neck and jaw , also , his / her ears and nose, which may also be sites of infection , Checking for a rash known as scarlatina, which is associated with some cases of strep throat , Listening to his / her breathing and heartbeat [27] , Check for enlargement of the spleen [28] .

The doctor may use a swab to take a rapid strep test or throat culture, Also, In some cases, he may do a CBC to find out the cause of the infection. By these tests could determine the cause of the infection [29] .

When the reasons of the infection had been determined , The doctor consults with the parents about the best way to treat this kind of the infection, considering the patient's history and the illness history.

If tonsillitis caused by a virus infection, the physician would advise analgesic medication for pain and fever. However, the naturally healing in viral infection without medical intervention is the best. The doctor recommends the patient to take analgesic drugs such as Paracetamol (Fevadol, Adol" brand name), or Ibuprofen (Nurofen) only if necessary. Beside drinking of warm liquids, such as soup, broth, Gargling with warm salt water, And using a cool-mist humidifier to moisten the air [30] .

In the case of bacterial infection, the physician prescribes an antibiotic for the therapy such as Augmentin (Amoxicillin and Clavulanate) and Zithromax (Azithromycin). The course of antibiotic must be taken full and as instructed by the physician or pharmacist. Inappropriate use of antibiotic may worsen the infection and increases the risk of it spreading to other areas of the body [31] .

Tonsillectomy Surgery:-

In some cases of chronic tonsillitis that does not respond to conventional therapy may require surgical removal of the tonsils [32] , and that depends on many factors that we discussed in our research.

The indication of tonsillectomy are recurrent tonsillitis, presence of abscess, sleep disturbance, airway obstruction, rheumatic fever, speak abnormalities, tonsillolith, presence of diphtheria carriers, presence of streptococcal carriers, glomerulonephritis, halitosis, tonsillar cyst, recurrent sore throat, recurrent sinusitis ,and suspicion of malignancy [33,34] .

Tonsillectomy is partial for one of the palatine tonsil or both of them. Intracapsular, Laser or radiofrequency tonsillectomy are the most common ways of tonsillectomy procedure [35] . The difference in the immunity after tonsillectomy is a wandering point for many parents, and the difference of immunity in children before and after tonsillectomy have never been examined in Taif city. So, This research seeks to: Enhancing the health awareness of the community members regarding ways of tonsillitis therapy. Examine the knowledge level of causes of tonsillitis. Examine of the treatment options in patients with tonsillitis, examine the Indication of tonsillectomy. Examine if the antibiotics enough substitute for the surgery. Study the effect of the tonsillectomy in immunity. Determine the effect of the knowledge level of the parents in this surgery on their decision.

For these reasons our research was aimed to find out the difference of the immunity in children before and after tonsillectomy in our city (Taif city), through this Knowledge of the difference in the immunity, we can educate the people with the effect of this surgery on children.

Methodology and Design:-

Purpose and Research objectives:

1. Determine the sociodemographic characteristic and the general clinical pictures.
2. Determine the indications of tonsillectomy .
3. Determine the efficacy of tonsillectomy in the genral health .

Setting:-

The study was conducted in Taif city

Study design:-

Across sectional study allocated for tonsillitis in children , to determine the Efficacy of tonsillectomy in the immune

system in children during the period from 3 Aug 2015 to 10 Oct 2015

A)Settings and Duration:-
the study was conducted in Taif city . The study was carried out for 3 months from 3 Aug 2015 to 10 Oct 2015 .

B)Sample volume and selection:-
A random sample composed of one-hundred children in Taif city , ages was between 3 years to 15 years old .

C) Tool of data collection:-
A structured questionnaire was designed for data collection by the researchers based up on a review of the literature. It includes four parts, The first part: the social and historical data, such as age of the patient, Number of tonsillitis attacks, Years of attacks, Duration of the attack, Difficult in swallowing, Difficult in breathing, Poor general health, Poor appetite.

The second part; the signs and the symptoms of the disease and the kind of therapy that recommended by the physician.

The third part; the indication of tonsillectomy.
The fourth part; the effect of tonsillectomy on immunity of children by follow up the cases for one year post the surgery.

The difference in the immunity after tonsillectomy is a wandering point for many parents. So , in our research, we are looking for the difference of the immunity in children before and after tonsillectomy.

E) Method:
we conducted a cross-sectional study by random sample patients in Taif city; the data was collected from face to face interview, All data were collected, and all data has been statistical analysis to specify a recommended answer.

F) Ethical considerations:
Official permission on this study was obtained from parents . They were informed about the nature of the study. Oral consent obtained from parents who agreed to participate in the study.

Inclusion criteria:
- Children presented to the hospital no matter the nationality .
- Children presented to the hospital no matter the gender (boy and girls) .
- Children with tonsillitis .
- Age between 3 years and 15 years.
- No matter any other disease condition .
- Patient who recommended to tonsillectomy by the physician .
- New or recurrence case

Exclusion criteria :
- patient under 3 years old .
- Adult patients who are above 15 years old .
- Non-tonsillitis patients .
- Patient who are not recommended to tonsillectomy by the physician .

Statistical analysis:-
All data in this study are expressed in the form of mean. Frequencies and percentages were used for describing data, chi-square test was used with a significance level of $P< 0.05$. Statistical analysis was used to determine the difference of the immunity in children before and after tonsillectomy .

Research end point:-
The primary end point: was that determine the difference of the immunity in children before and after tonsillectomy.

Secondary end point:-

1- Determine the indication of tonsillectomy.
2- Determine the effect of tonsillectomy on children's general health .
3- Educate other people with the effect of tonsillectomy on children .

Result and discussion:-

This study aimed to determine the difference of the immunity in children before and after tonsillectomy . A cross sectional study was conducted among random sample of children in Taif city. Data were collected using a self-administered questionnaire which included questions about the socio- demographic data , causes of tonsillitis , kind of therapy that the patient received , Indication of tonsillectomy , examine if the antibiotics enough substitute for the surgery , response of surgery and activity of child after the surgery .

Social and historical information 1-Tonsillitis in Taif city . One-hundred participants were interviewed in this study. Adults were excluded from that survey. Children who are between three and fifteen years old and presented to the hospital with tonsillitis in the period from 3 Aug 2015 to 10 Oct 2015 both gender either boy or girls are included in the survey.

Demographics:-

1-Sample distribution by age variable :

There was a variation in the interviewed age group. The data were illustrated in table (1-A) and diagram (1-A). The highest percentage of children with tonsillitis are in the age group (6-9) years old , they reached up to 35 % while the lowest percentage was at the age group (13-15) years old , which reached (12 %). That indicates that children between age 6-9 years old are more susceptible to the disease from others.

Table (1-A) . Sample distribution by age variable

Age	Number of patient	Percent %
3-5 years	32	32 %
6-9 years	35	35 %
10-12 years	21	21 %
13-15 years	12	12 %
Total	100	100 %

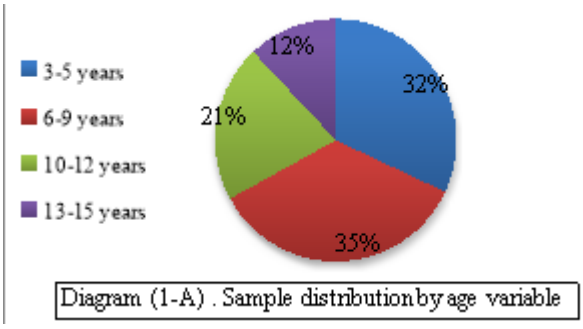


Diagram (1-A) . Sample distribution by age variable

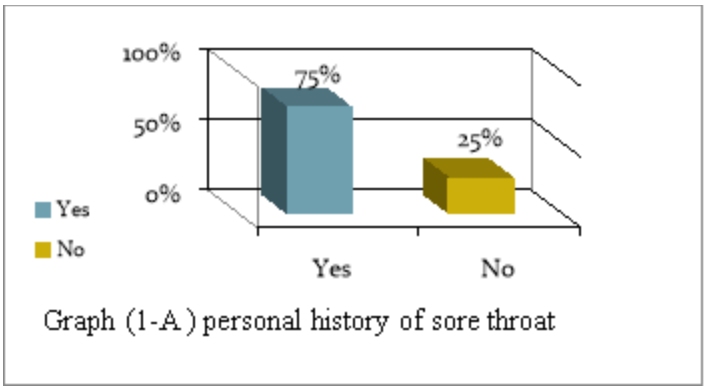
Sample distribution by historical information :

1- personal history of sore throat

Table (2-A) and graph (1-A) show that the seventy-five percent (75 %) of patient had sore throat history in the last three month prior the latest date of presenting to the hospital because of the same issue in time the study , while twenty-five percent (25 %) of them don't have sore throat in the last three month prior the last date of presenting to the hospital .

Table (2-A) Sore throat history

Sore throat history	Number of patients	Percent
Yes	75	75 %
No	25	25 %
Total	100	100%



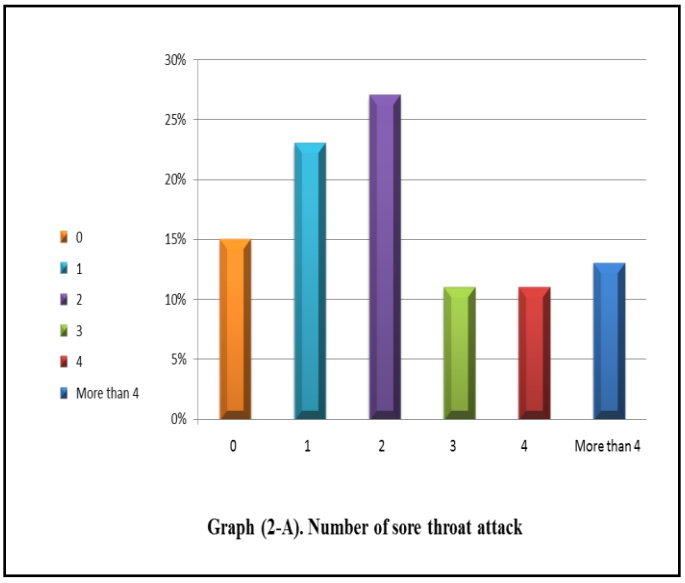
Graph (1-A) personal history of sore throat

2- Number of sore throat attacks in 3 months

27 % of patient had two attacks of the sore throat in the last three months prior the study , As we can see in table (3-A) and graph (2-A) . While only 13 % of the patient had more than 4 attacks in the last three month prior the study . A percent of 15% of patient who had no sore throat in the last three month prior the study .

Table (3-A) . Number of sore throat attacks

Number of attacks	Number of patient	Percent
0	15	15 %
1	23	23 %
2	27	27 %
3	11	11 %
4	11	11 %
More than 4	13	13 %
Total	100	100



Graph (2-A). Number of sore throat attack

3- Duration of acute sore throat attack

56% of patients had less than one week (6days or less) of infection , which mean it wasn't acute attack .While 12 % of them had acute sore throat attack Which persisted to four weeks or more . The 18% of patient had 7-21 days (one – three weeks) sore throat attack . As we can see in Table (4-A) and diagram (2-A) .

Table (4-A) . Duration of acute sore throat attack / last 3 months

Duration of the attack	Number of patient	Percent %
0	14	14 %
Less than week	56	56 %
One-three weeks	18	18 %
More than 4 weeks	12	12 %
Total	100	100%

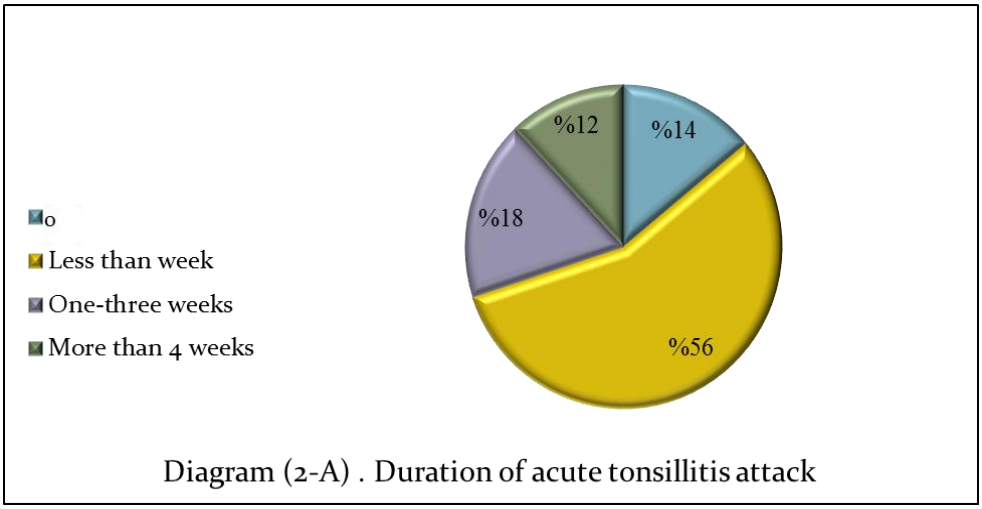


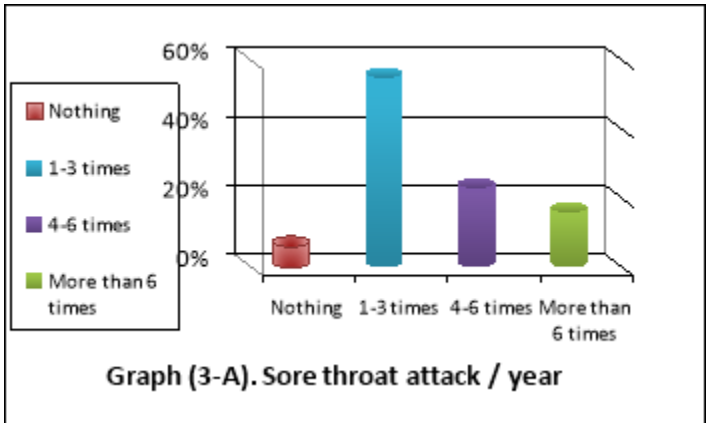
Diagram (2-A) . Duration of acute tonsillitis attack

4- Sore throat attack / year

Table (5-A) and graph (3-A) shows that 55 % of patients had a history of one to three times of sore throat attack per one year . However , 23% and 16% scored for patients who had four to six times , or more than six times ; respectively , sore throat attack per one year. The recurrence of these attacks is one of the tonsillectomy reasons .

Table (5-A) . Sore throat attack / one year

Number of attacks	Number of patient	Percent %
Nothing	6	6 %
1-3 times	55	55 %
4-6 times	23	23 %
> 6 times	16	16 %
Total	100	100 %



Graph (3-A). Sore throat attack / year

5- Acute or chronic sore throats that lasted more than 2 weeks .

Table (6-A) and diagram (3-A) shows that the patient who had chronic sore throat attack lasted for more than couple

weeks 3 months prior the study was 70% of them . However the 30% of patient have acute sore throats that lasted for more than 2 weeks .

Table (6-A). Acute or chronic sore throat for 2 weeks

Number of attacks	Number of patient	Percent %
Acute	30	30 %
Chronic	70	70 %
Total	100	100 %

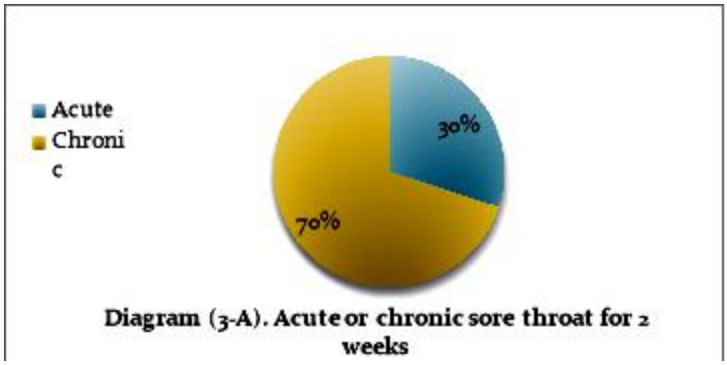


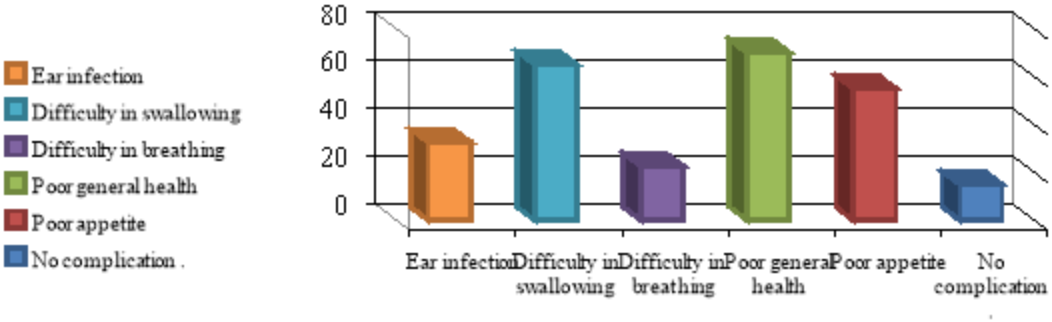
Diagram (3-A). Acute or chronic sore throat for 2 weeks

6- Sore throats complications.

many complications associated with sore throat , the most common are poor general health in 70% , swallowing difficulties in 65% and poor appetite in 55 % as shown in table (7-A) and graph (4-A) . however , ear infection and breathing difficulties have a less of complication with patient in 33 % and 23 % respectively , while only 15 % of patients had no complication with sore throat .

Table (7-A). Sore throats complications

Complication	Number of patient	Percent %
Ear infection	33	33 %
Difficulty in swallowing	65	65 %
Difficulty in breathing	23	23 %
Poor general health	70	70 %
Poor appetite	55	55 %
No complication .	15	15 %
Total	100	100%



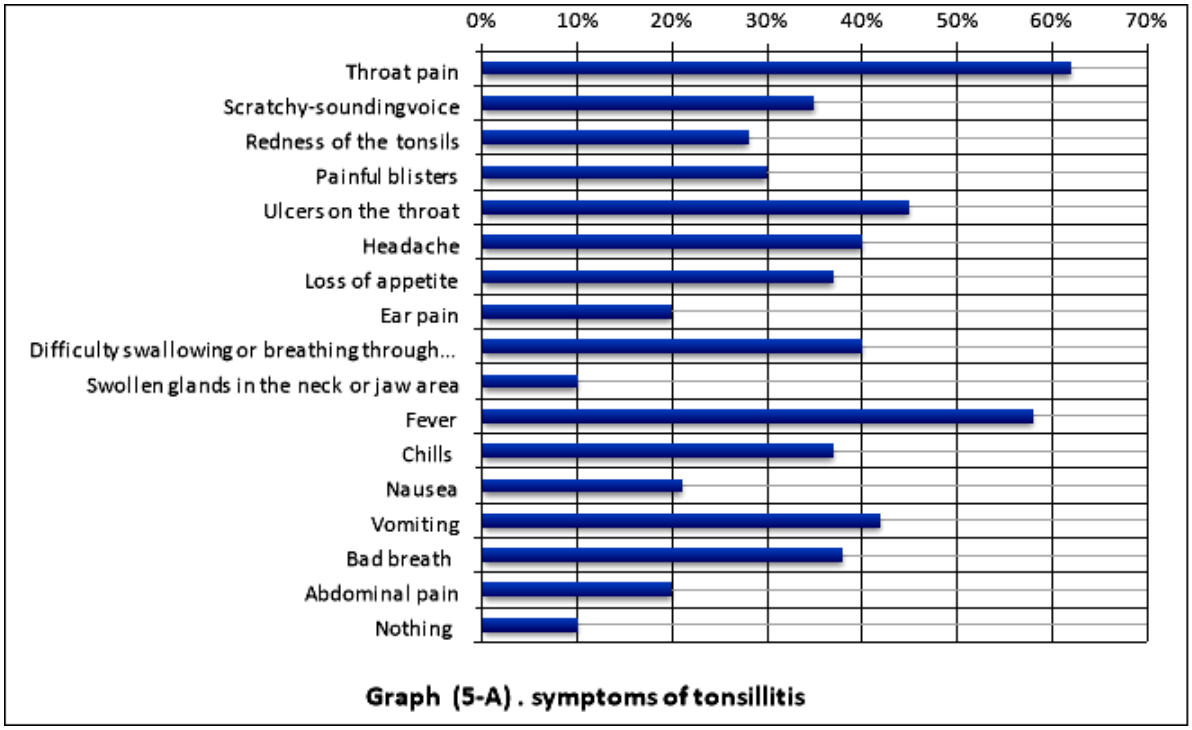
Graph (4-A). Sore throats complications.

7- Symptoms of tonsillitis

In Table (8-A) and graph (5-A) the symptoms of tonsillitis . more than 60% of patients have a throat pain and about 58% of them have fever that associated with tonsil infection . While , 10% of them while , only 10 % of them have not feeling any symptoms associated with tonsillitis.

Table (8-A). symptoms of tonsillitis

Complication	Number of patient	Percent %
Throat pain	62	62%
Scratchy-sounding voice	35	35%
Redness of the tonsils	28	28%
Painful blisters	30	30%
Ulcers on the throat	45	45%
Headache	40	40%
Loss of appetite	37	37%
Ear pain	20	20%
Difficulty swallowing or breathing through the mouth	40	40%
Swollen glands in the neck or jaw area	10	10%
Fever	58	58%
Chills	37	37%
Nausea	21	21%
Vomiting	42	42%
Bad breath	38	38%
Abdominal pain	20	20%
Nothing	10	10%
Total	100	100%



Graph (5-A) . symptoms of tonsillitis

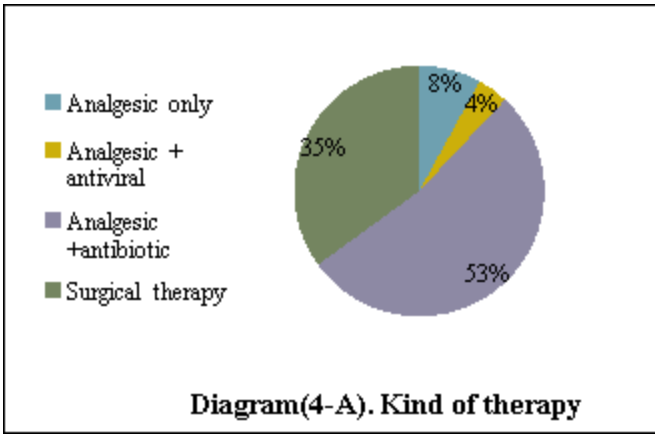
8- Kind of therapy

Antibiotics occupies first place in the treatment with 53% between patient

, Followed by surgical therapy by 35 % of patients . while only 8 % of them need only analgesic and 4% need antiviral therapy

Table (9-A). Kind of therapy

Kind of therapy	Number of patient	Percent %
Analgesic only	8	8 %
Analgesic + antiviral	4	4 %
Analgesic +antibiotic	53	53%
Surgical therapy	35	35 %
Total	100	100 %



Diagram(4-A). Kind of therapy

B- Tonsillectomy

Indication of tonsillectomy

The most common indication of tonsillectomy is the recurrent of the tonsillitis in 34.4 % of patient as we can see in table (1-B) . Followed by , Recurrent fever in 14.2 % then Speak abnormalities and Halitosis in 17% in total . Came in the fourth place Sleep disturbance,, Tonsillolith , Recurrent sore throat and Recurrent sinusitis in 22.8 % of the patients .

Table (1-B). Indication of tonsillectomy

Indication	Number of patient	Percent %
Recurrent tonsillitis	12	34.4 %
Presence of abscess	0	0 %
Sleep disturbance	2	5.7 %
Recurrent fever	5	14.2%
Speak abnormalities	3	8.5 %
Tonsillolith	2	5.7 %
Diphtheria carriers	0	0 %
Streptococcal carriers	1	2.9 %
Glomerunephritis	1	2.9 %
Halitosis	3	8.5 %
Tonsillar cyst	1	2.9 %
Recurrent sore throat	2	5.7 %
Recurrent sinusitis	2	5.7 %
Suspicion of malignancy	1	2.9 %
Total	35	100%

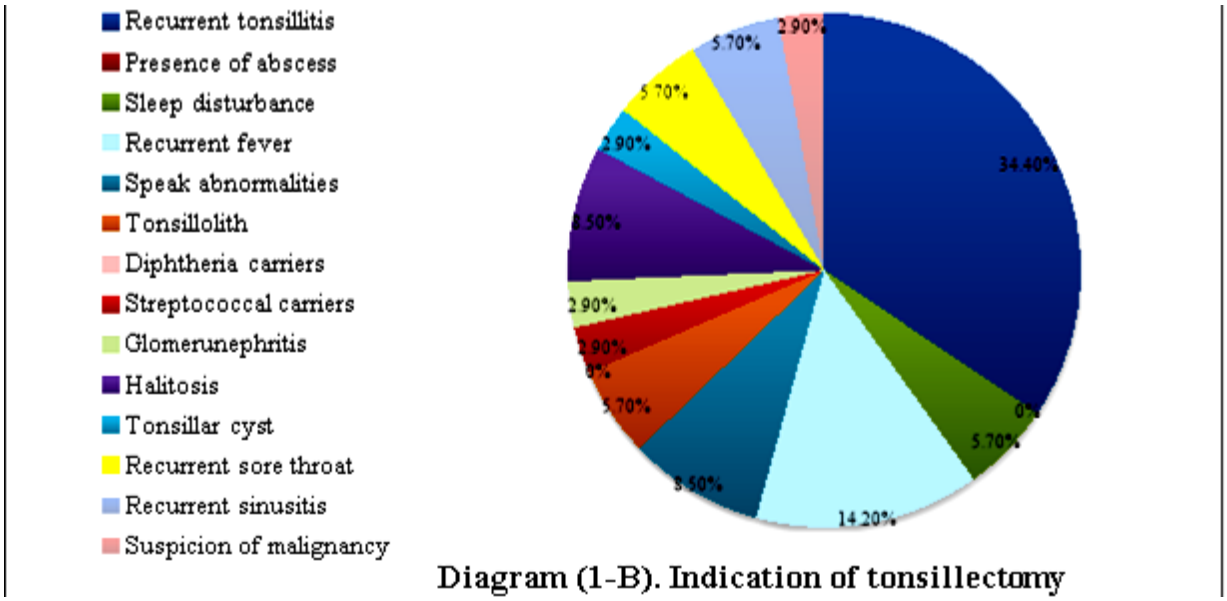


Diagram (1-B). Indication of tonsillectomy

C- Follow up the case

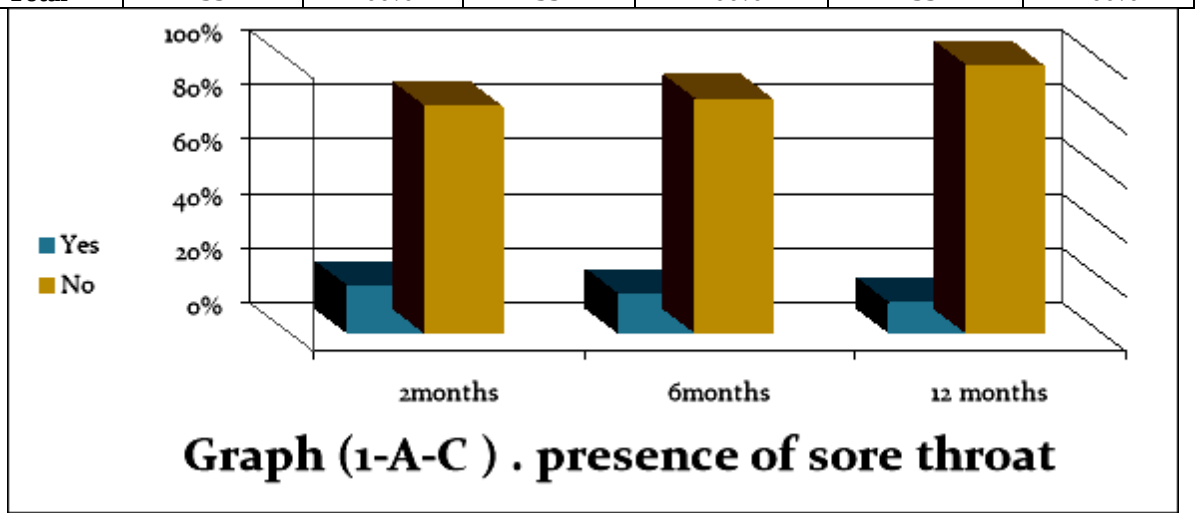
A – patient case After surgery :

1- Sore throat

Table (1-A-C) and graph (1-A-C) show us that presence of sore throat decreased in patients who had tonsillectomy but not completely recovered .

Table (1-A-C) . presence of sore throat

Sore throat	Two months	Percent %	Six months	Percent %	12 months	Percent %
Yes	6	17.1%	5	14.3%	4	11.4%
No	29	82.9%	30	85.7%	31	88.6%
Total	35	100%	35	100%	35	100%



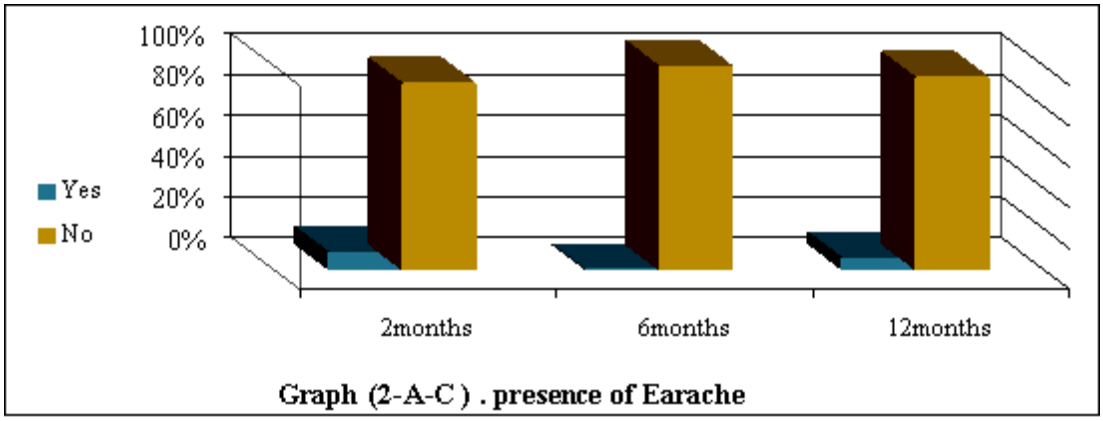
Graph (1-A-C) . presence of sore throat

2- Earache

Earache associated with tonsillitis is almost cured in patients after tonsillectomy as we can see in table (2-A-C) and graph (2-A-C) .

Table (2-A-C) . presence of Earache

Earache	Two months	Percent %	Six months	Percent %	12 months	Percent %
Yes	3	8.6 %	0	0 %	2	5.7%
No	32	91.4 %	35	100 %	33	94.3%
Total	35	100%	35	100%	35	100%



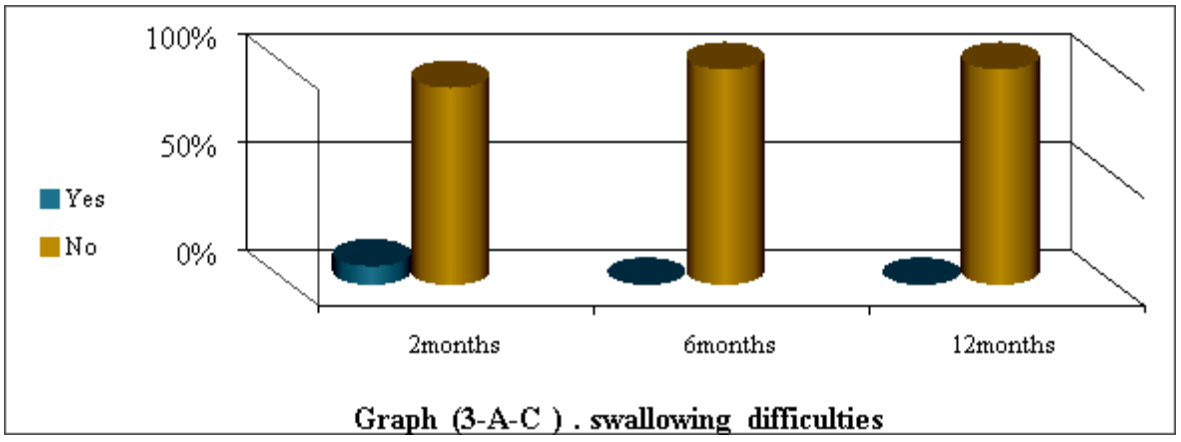
Graph (2-A-C) . presence of Earache

3- Swallowing difficulties :

Table and graph (3-A-C) show us how much is the impact of tonsillectomy on swallowing and how it is getting better after tonsillectomy .

Table (3-A-C) . Swallowing difficulties

Swallowing	Two months	Percent %	Six months	Percent %	12 months	Percent %
Yes	3	8.6 %	0	0 %	0	0 %
No	32	91.4 %	35	100 %	35	100%
Total	35	100%	35	100%	35	100%



Graph (3-A-C) . swallowing difficulties

4- Presence of fever :

The fever associated with tonsillitis and sore throat is almost curd in more than 95% of the patients after tonsillectomy as we can see in table and graph (4-A-C) .

Table (4-A-C) . Presence of fever

Fever	2 months	Percent %	6 months	Percent %	12 months	Percent %
Yes	3	22.9 %	0	0 %	1	2.9 %
No	27	77.1 %	35	100 %	34	97.1%
Total	35	100%	35	100%	35	100%

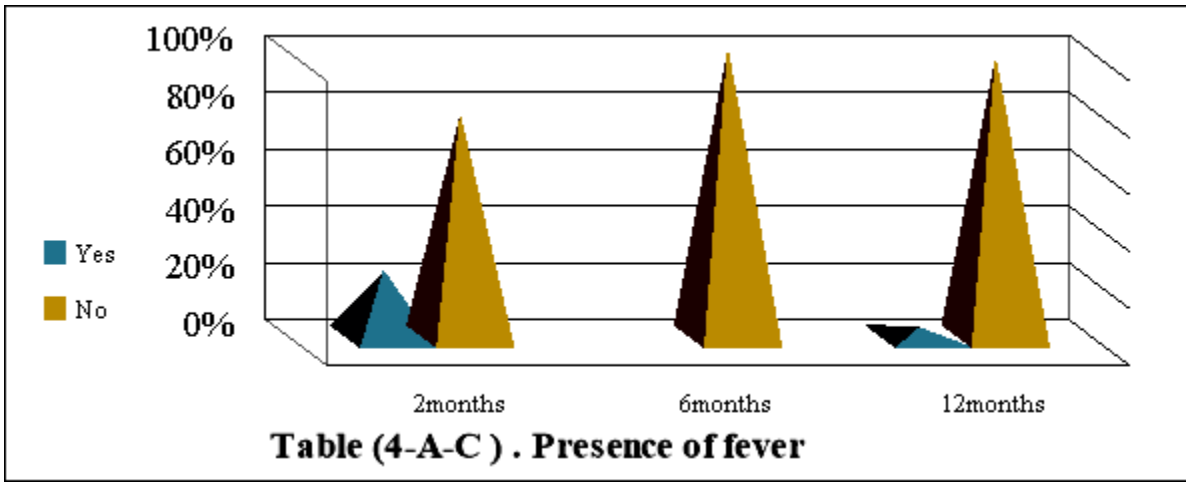


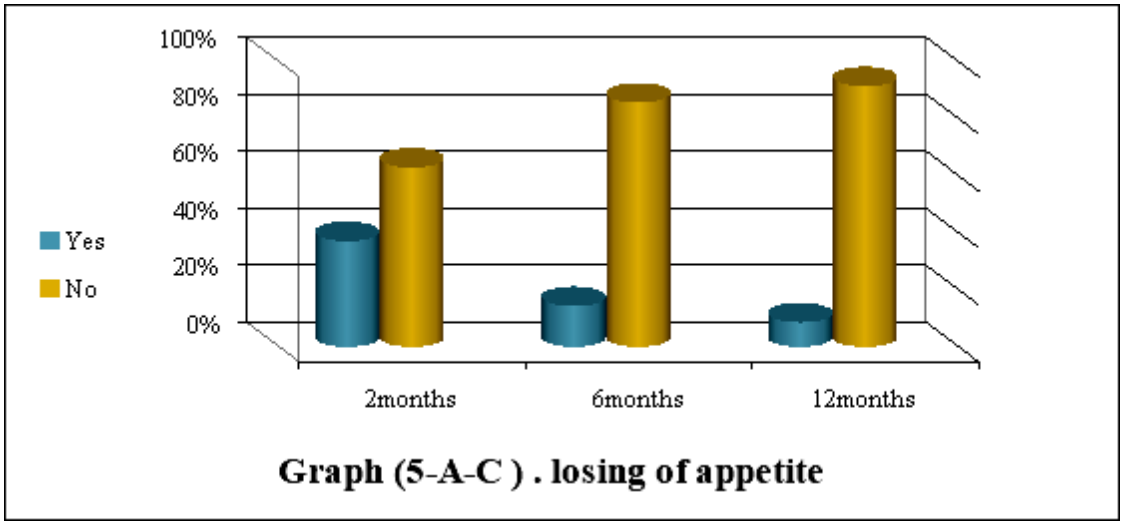
Table (4-A-C) . Presence of fever

5- losing of appetite :

91.4% of patient their appetites had improved by 91.4 % a year after tonsillectomy , as we can see in table and graph (5-A-C) .

Table (5-A-C) . losing of appetite

Loos of appetite	2 months	Percent %	6 months	Percent %	12 months	Percent %
Yes	13	37.1 %	5	14.3 %	3	8.6 %
No	22	62.9 %	30	85.7 %	32	91.4%
Total	35	100%	35	100%	35	100%



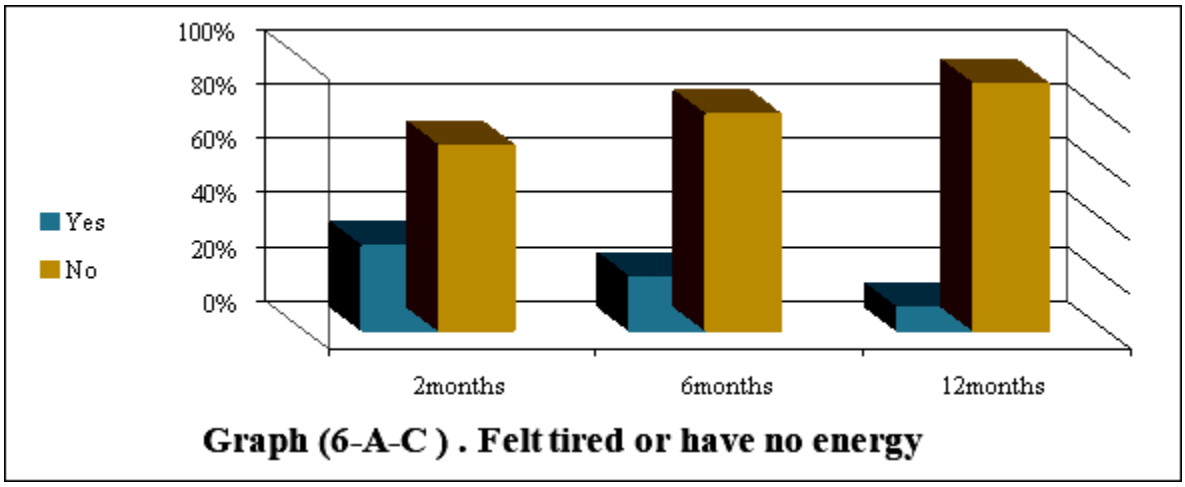
Graph (5-A-C) . losing of appetite

6- Felt tired or have no energy :

Table and graph (6-A-C) show us the improvement of children health . whereby , that feeling tired or having no energy is decreased after tonsillectomy. By following patient case we noticed that patient feeling better with time . there is only 8.6 % of patient still feeling tired a year after tonsillectomy . However a 91.4% of them is feeling better

Table (6-A-C) . Felt tired or have no energy

Tired feeling	2 months	Percent %	6 months	Percent %	12 months	Percent %
Yes	11	31.4 %	7	20 %	3	8.6 %
No	24	68.6 %	28	80 %	32	91.4%
Total	35	100%	35	100%	35	100%



Graph (6-A-C) . Felt tired or have no energy

B - Activity of the child :

1- Hospitalization

Only 2.9% of patients need to be hospitalized two months after surgery . However , there is no need to be hospitalized where there is a clear improvement after six months or a year of surgery.

Table (1-B-C) . Hospitalization

Hospitalization	2 months	Percent %	6 months	Percent %	12 months	Percent %
Yes	1	2.9 %	0	0 %	0	0 %
No	34	97.1 %	35	100 %	35	100%
Total	35	100%	35	100%	35	100%

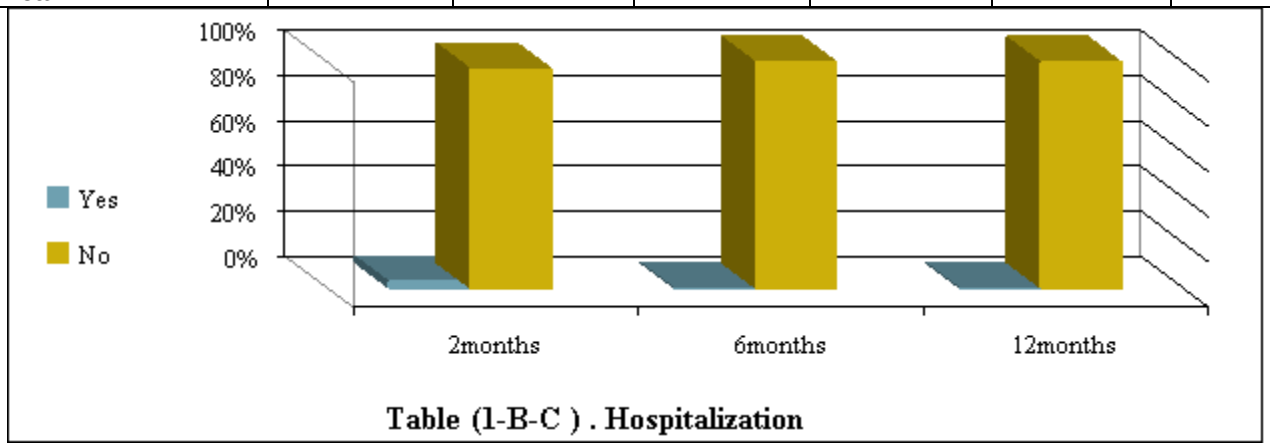


Table (1-B-C) . Hospitalization

2- stay-at home in the bed :

Most of patient haven't to be laying in the bed after procedure . This indicates that the surgery was very well without any complications.

Table (2-B-C) . Laying in bed at-home

Laying in bed	2 months	Percent %	6 months	Percent %	12 months	Percent %
Yes	0	0 %	2	5.7 %	0	0 %
No	35	100 %	33	94.3 %	35	100%
Total	35	100%	35	100%	35	100%

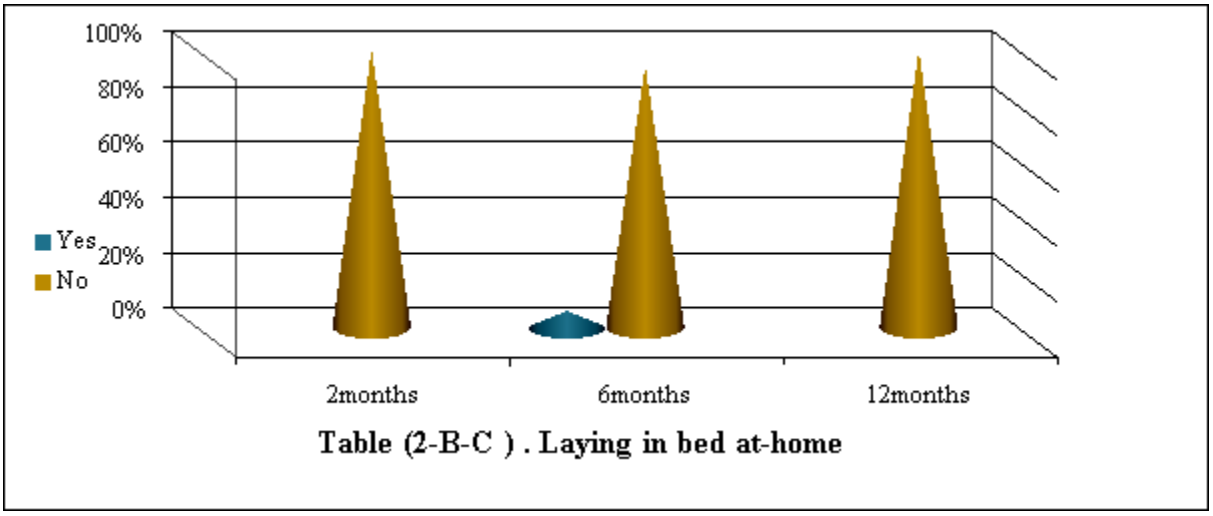


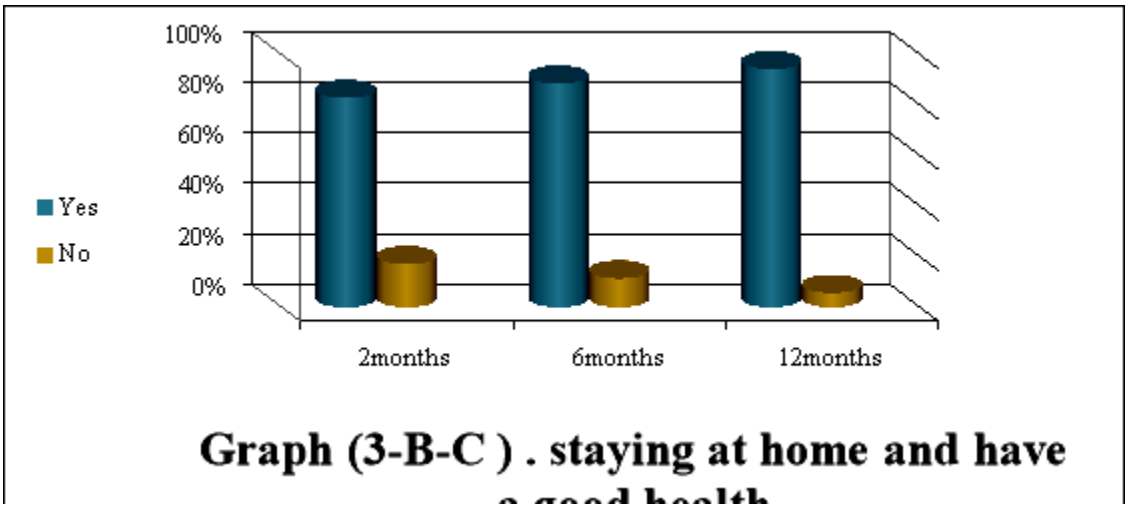
Table (2-B-C) . Laying in bed at-home

3- At-home and have a good health

Around 95% of patients had a good general health after tonsillectomy . Which means that the patient is not suffering from complications after surgery, and tonsillectomy has had a good effect on their general health .

Table (3-B-C) . staying at home and have a good health

The good health	2 months	Percent %	6 months	Percent %	12 months	Percent %
Yes	29	82.9 %	31	88.6 %	33	94.3 %
No	6	17.1 %	4	11.4 %	2	5.7 %
Total	35	100%	35	100%	35	100%



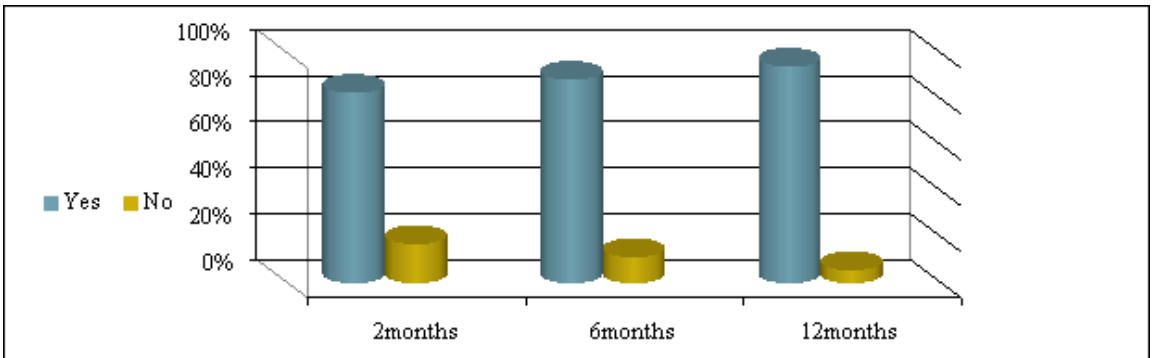
Graph (3-B-C) . staying at home and have

4- Ability to carry out daily activities :

94.3% Children who have to eradicate the tonsils were able to perform their daily activities on their own.

Table (4-B-C) . Ability to carry out daily activities

Ability to do activity	2 months	Percent %	6 months	Percent %	12 months	Percent %
Yes	29	82.9 %	31	88.6 %	33	94.3 %
No	6	17.1 %	4	11.4 %	2	5.7 %
Total	35	100%	35	100%	35	100%



Graph (4-B-C) . staying at home and have a good health

D- Opinion of the surgery :

1- suitability of antibiotics as substitute for the surgery .

28.6% of patient's parents indicated to that the antibiotic is suitable to be a substitution for tonsillectomy , due to the possibility of sore throat. However , 71.4 % of them prefer the surgery on the antibiotics .

Table (1-D) . suitability of antibiotics as substitute for the surgery

suitability	Number of patients	Percent %
Yes	25	71.4 %
No	10	28.6%
Total	35	100

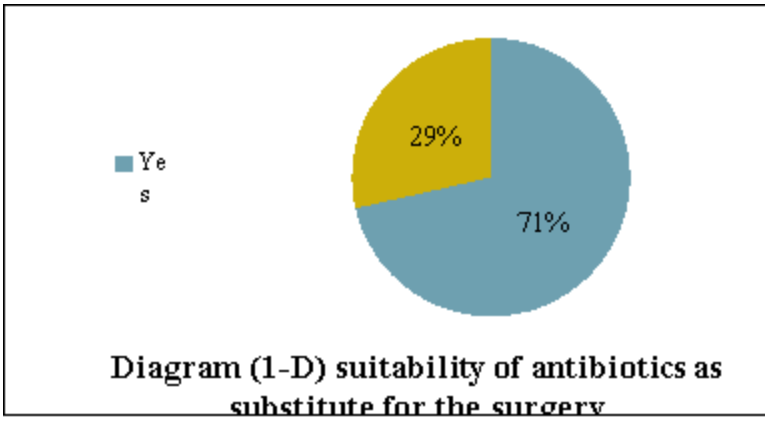


Diagram (1-D) suitability of antibiotics as substitute for the surgery

2- effectiveness of surgery

Only 8.6 % of parents feel that the surgery were not beneficial and have no impact on child's health. While 91.4% of them feel that the surgery was effective and have a clear influence on their children's health.

Table (2-D) . effectiveness of surgery

suitability	Number of patients	Percent %
Effective	32	91.4 %
Not effective	3	8.6%
Total	35	100

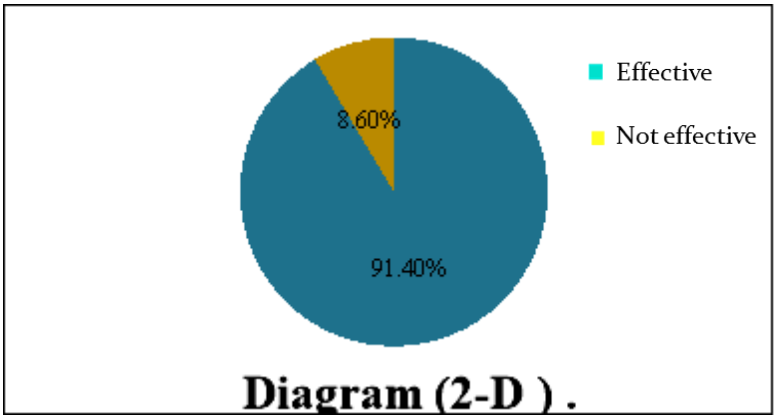


Diagram (2-D) .

- Generally tonsillectomy have a good effective in patients general health , it is reduce the frequency and severity of sore throats .
- Tonsillectomy solve the problems of tonsillitis recurrence , Recurrent fever , Speak abnormalities , Halitosis ,Sleep disturbance , Tonsillolith and Recurrent sinusitis , however it does not get rid of sore throats altogether .
- According to Mohamed A. Bita , Dowli A. , Mourad M. and Rameh C. in study of Effect of tonsillectomy on the immune system: where do we stand now? . In study done on 19 patients undergoing total or partial tonsillectomy , that tonsillectomy has no significant effect on the immune system [(36)].
- Tonsillectomy (TE) seems to be a cost-saving procedure with a positive effect on a patient's health-related quality of life . (Wikstén J1, Blomgren K, Roine RP, Sintonen H, Pitkäranta A) [(37).]
- Tonsillectomy has no clinically significant negative effect on the immune system.(Bitar MA1, Dowli A2, Mourad M) [(38)] .

Between 1971-2014, 35 research studies were performed on the effect of tonsillectomy on the immune system , Collectively, 1997 patients were included and meta-analysis performed. The ultimate conclusion was that tonsillectomy surgery does not cause any immune system harm.(Chang C.) [(39)]

- After tonsillectomy humoral parameters were found reduced but overall impact on humoral immune status was not significantly altered.(Nasrin M, Miah M. , Datta P. , Saleh A., Anwar S. and Saha K)[(40)].

Conclusion:-

The presented study aimed to determine the difference of the immunity in children before and after tonsillectomy . The socio-demographic data , causes of tonsillitis , kind of therapy that the patient received , Indication of tonsillectomy , examine if the antibiotics enough substitute for the surgery , response of surgery and activity of child after the surgery . By screening 100 child as a random samples . From all the previous result we concluded that:

- The highest percentage of children with tonsillitis are in the age group (6-9) years old in percent of 35 % .
- 75 % of patient had sore throat history in the last three month prior the study .
- Recurrence of tonsillitis for 4-6 times or up than six and it's long duration is the most common indications of tonsillectomy .
- A poor general health , swallowing difficulties and poor appetite are the most common complication associated with tonsillitis and that lead to the decision to removal of the tonsils .
- The most common indication of tonsillectomy is the recurrent of the tonsillitis in 34.4 % of patient . Followed by , Recurrent fever in 14.2 % then Speak abnormalities and Halitosis in 17 % in total . Came in the fourth place Sleep disturbance,, Tonsillolith , Recurrent sore throat and Recurrent sinusitis in 22.8 % of the patients .

- Around 95% of patients had a good general health after tonsillectomy , and been able to carry out their usual daily activities .
- Antibiotics occupies first place in the treatment of tonsillitis also some parents preferred the antibiotic over tonsillectomy .

- 91.4% of parents feel that the surgery was effective and have a clear influence on their children's health .

Recommendation:-

• We recommend to follow basic health and hygiene precautions to protect children from viruses and bacteria that cause tonsillitis like: avoiding close contact with others who are sick , remind child about the importance of proper hand-washing, especially when they be around people who are sick , Wash and disinfect surfaces and toys.
• We recommended check the children for recurrent throat infection if there have been more than 7 episodes in the past year before the decision of tonsillectomy.
• Assessing the child with recurrent sore throat infection who meet criteria of tonsillectomy .
• Asking caregivers of children with sleep-disordered breathing and tonsil hypertrophy about comorbid conditions that might improve after tonsillectomy .
• Counseling caregivers about tonsillectomy as a means to improve health in children especially in children with recurrent tonsillitis , recurrent fever, speak abnormalities halitosis , sleep disturbance , tonsillolith , recurrent sore throat and recurrent sinusitis
- Spread awareness about tonsillectomy effect on immunity .
- Work on the preparation of educational programs by radio, television, social media and other media on the ways of protecting children from exposure to causes that lead to inflammation of the tonsils .
- Parents should give the child cold drinks and ice cream during the first 24 hours after surgery to help in reducing the pain 4-6 hours after surgery to ensure the process of swallowing and not to be choked .
- Give the child plenty of fluids, especially water, knowing that child may not feel the desire to drinking but it is very essential to obtaining sufficient quantities of liquids.
- Give the child the medication as prescribed by the doctor .
- Not allowing the child for 10 days of eating foods that excite and throat irritation, such as harsh foods like carrots, biscuits, or foods crunchy such as potatoes (chips), or hot drinks like tea, coffee, or juices and fruit sour like oranges, lemons. Because they are cause irritation of the throat .
- Give foods that are easy for children to swallow on the first day after the surgery , such as soft bread and mashed potatoes .
- Advocating for pain management after tonsillectomy and educating caregivers about the importance of managing and assessing pain .

Summary:-

- The presented study aimed to determine the difference of the immunity in children before and after tonsillectomy . The socio-demographic data , causes of tonsillitis , kind of therapy that the patient received , Indication of tonsillectomy , examine if the antibiotics enough substitute for the surgery , response of surgery and activity of child after the surgery .
- we conducted cross sectional study by random sample patients in Taif city, the data was collected from face to face interview , All data were collected and all data has been statistically analysis to specify a recommended answer.
- The highest percentage of children with tonsillitis are in the age group (6-9) years old in percent of 35 % .
- The most common indication of tonsillectomy is the recurrent of the tonsillitis in 34.4 % of patient . Followed by , Recurrent fever in 14.2 % then Speak abnormalities and Halitosis in 17 % in total . Came in the fourth place Sleep disturbance,, Tonsillolith , Recurrent sore throat and Recurrent sinusitis in 22.8 % of the patients .
- Around 95% of patients had a good general health after tonsillectomy , and been able to carry out their usual daily activities .
- 91.4% of parents feel that the surgery was effective and have a clear influence on their children's health .

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