



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.3270441>Available online at: <http://www.iajps.com>

Research Article

**FREQUENCY OF INFECTIOUS DISEASES AMONG  
CHILDREN UNDER 5 YEARS OF AGE**Dr. Naeema Natasha<sup>1</sup>, Dr Rubab Arif<sup>2</sup>, Dr Irum Arshad<sup>3</sup><sup>1</sup>Ayub Medical College, Abbottabad, <sup>2</sup>Islamabad Medical and Dental College, Islamabad,<sup>3</sup>Fauji Foundation Medical College, Islamabad.

Article Received: May 2019

Accepted: June 2019

Published: July 2019

**Abstract:****Objectives:**

- To determine the most frequent infectious disease in children under 5 years of age, admitted in pediatric ward of Holy family Hospital, Rawalpindi.
- To know the socio-demographic factors of infectious diseases in children under 5 years of age living in rural and urban areas.

**Study Design:** A descriptive cross-sectional study.**Material and Methods:** To determine frequency of infectious diseases under five years of age, we have done Cross sectional descriptive type of study in Pediatric ward of Holy family hospital Rawalpindi. The study was done over a period of 3 months i.e. from 1<sup>st</sup> August, 2018 to 31<sup>st</sup> October, 2018 A total of 107 children meeting the inclusion criteria were interviewed. Sample was collected by Non-probability convenient sampling technique. Data was collected using a Questionnaire along with checklist. The data after collection and assembling is analyzed by SPSS 16.0. The result and discussion were made on this analysis.**Result:** Out of 107 patients, 40 patients (37.4%) had acute respiratory infections (ARI's). 26 patients (24.3%) had diarrhea, 10 patients (9.3%) gastroenteritis, 6 patients (5.6%) Malaria, 6 patients (5.6%) encephalitis, 3 patients (2.8%) patients had meningitis while the prevalence of sepsis, pertussis, T.B, LRTI, UTI was 1.9% i.e. 2 patients had these diseases.**Conclusion:** It is concluded from our study that acute respiratory infections (ARI) is the most frequent infectious disease and infectious diseases are more common in rural areas as compared to urban areas in children admitted in pediatric ward of Holy family Hospital, Rawalpindi.**Key Words:** Frequency, Infectious diseases, Holy family Hospital.**Corresponding author:****Dr. Naeema Natasha,**

Ayub Medical College, Abbottabad.

QR code



Please cite this article in press Naeema Natasha et al., *Frequency Of Infectious Diseases Among Children Under 5 Years Of Age.*, Indo Am. J. P. Sci, 2019; 07[07].

**INTRODUCTION:**

Infectious diseases are those diseases that are communicable. These diseases include acute respiratory tract infections Measles, Mumps, Cold fever, Diarrhea, Polio, Hepatitis etc. These infectious diseases are common cause of death in 3<sup>rd</sup> world countries like Pakistan.<sup>1</sup> Because of low immunity system children are more prone to these infectious diseases. These diseases are transmitted by finger, flies, fomites, clothes, toys, foods etc. Infectious diseases can be bacterial, viral and fungal.<sup>2</sup>

Respiratory tract infections create serious problems. Pneumonia is a major respiratory infection and each year it causes a large morbidity and mortality among children. Pneumonia is caused by various bacteria. Most important of these is Streptococcus. Most developing countries including Pakistan are still suffering from horrible consequences of pneumonia.<sup>3</sup> Along with pneumonia acute diarrhea is also very common especially in malnourished children. 25%-30% deaths are estimated by acute diarrhea. Retrovirus is responsible for cases of acute diarrhea.<sup>4</sup>

Global burden of disease and risk factors (GBD) estimated that in 2004 there were approximately 69,000 deaths from pneumonia and 1000 deaths from diarrheal diseases among children aged under 5 year in one country according for approximately 20% of all these deaths at these ages.<sup>4</sup> Whereas malnutrition in children estimates about 8% of deaths. Decreased food intake or increased rate of loss of body proteins or lower food quality lead to malnutrition. This is the common reason of death and disease development in children of 3<sup>rd</sup> world like Pakistan.<sup>5</sup> Low immunity children are more prone to be effected by viral and bacterial infections that are even life taking. Measles and mumps are other hunters of life in early age<sup>6</sup>. Starchan proposed a protective effect of infection on atopy by describing an inverse association between number of older siblings and hay fever. this effect has since confirmed using various markers of infectious burden such as number of older siblings.<sup>7</sup> Several authors have indeed reported that infectious diseases may enhance the development of asthma, particularly infections with respiratory syncytial virus.<sup>8</sup> The most common reason of death is believed to be decreased immunity in children compared to adults.<sup>9</sup> It is because of other reasons too as medicine for infectious diseases in children are not very effective as compared to their own immunity from mother in milk.<sup>10</sup>

Population surveillance is used to guide preventative strategies for influenza such as choosing strains for seasonal influenza vaccine constitution and early

identification of pandemic or epidemic antigenic drift variants.<sup>11</sup> In the United States, children <5 years comprised 28% of Influenza like Illness presentations in the Centers for Disease Control and Prevention (CDC) national network during the 2007–2008 influenza season.<sup>12</sup>

**Group A** rotaviruses are the major cause of diarrhea in young children worldwide.<sup>11</sup> From March 2001 to April 2002, 836 children less than 5 years of age were investigated in Hanoi, Vietnam. Diarrhea, especially acute diarrhea, remains a major public health problem in the world.<sup>13</sup> In developing countries, an estimated 12 or more diarrheal episodes per child per year occur within the first 5 years of life.<sup>14</sup> Annually, approximately 4.6 million pediatric deaths, about 25 to 30% of all deaths among children less than age 5 years, can be attributed to acute diarrhea.<sup>8</sup> The other commonly occurring diseases in children of age 5 are lower tract respiratory infections. Pneumonia is common. It should be considered as present when there is fever above 38.5 Celsius.<sup>15</sup> Respiratory distress appears with symptoms of cyanosis, grunting, nasal flaring, marked tachypnea, chest and sub costal recession and abdominal sea saw breathing.<sup>16</sup>

On the other hand the most common cause of disease and death in children in under developed countries is malnutrition.<sup>17</sup> Lack of education, poverty and resources leads to deficiency of basic life elements to children.<sup>18</sup> In 2001, the World Health Organization (WHO) established the external Child Health Epidemiology Reference Group (CHERG) to develop estimates of the proportion of deaths in children younger than age 5 years attributable to pneumonia, diarrhea, malaria and measles. Of the estimated 8,795 million deaths in children younger than 5 years worldwide in 2008, infectious diseases caused 68% (5,970 million), with the largest percentages due to pneumonia (18%), diarrhea (15%), and malaria (8%).<sup>19</sup> A separate study reported different risk estimates, with stronger associations between nutritional status and mortality for gastrointestinal and acute respiratory infections that coincide with malnutrition.<sup>15</sup> Marasmus and Kwashiorkor are common diseases.<sup>20</sup>

Measles is a viral infection which is also common in children of under developed countries. A number of deaths are reported due to Measles. Endemic measles was declared eliminated in the United States in 2000, but imported measles cases continue to cause outbreaks.<sup>21</sup> On June 20, 2011, 5 epidemiologically linked measles cases were reported to the Indiana State Department of Health.<sup>22</sup> Infants who develop chronic

HBV have a 25% risk of dying prematurely due to cirrhosis or liver cancer.<sup>23</sup> In contrast to HBV, persistent infection with HCV occurs in 50%–60% of infected children, regardless of age.<sup>24</sup> The relative risk for the development of cirrhosis is doubled in patients with HIV-HCV confection. Data on both HIV-hepatitis confection and hepatitis mono-infection among African populations, especially children, are limited.<sup>25</sup>

Study of these problems may generate application of clinical and practical knowledge to these diseases. Awareness of societies is compulsory for curing and preventing these diseases. A better understanding of these problems would contribute to most effective approach in preventing these problems. Hygienic conditions must be improved especially in developing countries.

### MATERIAL AND METHODS:

To determine frequency of infectious disease under five years of age we have done Cross sectional descriptive type of study in Pediatric ward of Holy family hospital Rawalpindi. The study was done over a period of 3 months i.e. from 1<sup>st</sup> August, 2018 to 31<sup>st</sup> October, 2018. A total of 107 children meeting the inclusion criteria were interviewed. Sample was collected by Non-probability convenient sampling technique. Our Inclusion criteria was Patient age ranging from 1-60 months (5years). Patient admitted with infectious disease. Patient admitted to pediatric ward of Holy family Hospital, Rawalpindi. And Exclusion criteria was Patient with infectious disease whose guardian does not give consent. Patient admitted to Neonatal ICU. Data was collected using a Questionnaire along with checklist. The data after collection and assembling is analyzed by SPSS 16.0. The result and discussion were made on this analysis.

### RESULTS:

In our research we found that the number of infected male patients was 63(58.9%) while it was 44 in case of females (41.1%). Total number of patients was 107 as shown in Table 1.1

**Table 1.1** Gender wise frequency of cases

Gender	Frequency	Percent
Male	63	58.9
Female	44	41.1
<b>Total</b>	<b>107</b>	<b>100</b>

We found that 83.2% patients belonged to rural area while 16.8% were from urban area as shown in Table 1.2

**Table 1.2** Area wise frequency of infectious disease

Area	Frequency	Percent
Rural	89	83.2
Urban	18	16.8
<b>Total</b>	<b>107</b>	<b>100</b>

It can be seen from our result that frequency of infectious diseases was low among literate people but it was higher in illiterate people. It was found that 42.1% were illiterate, 19.6% were having Primary education, 15.9% were Matric, 10.3% were having Higher Secondary education, 6.5% were Graduate, and 5.6% were having Master Degree as shown in Table 1.3

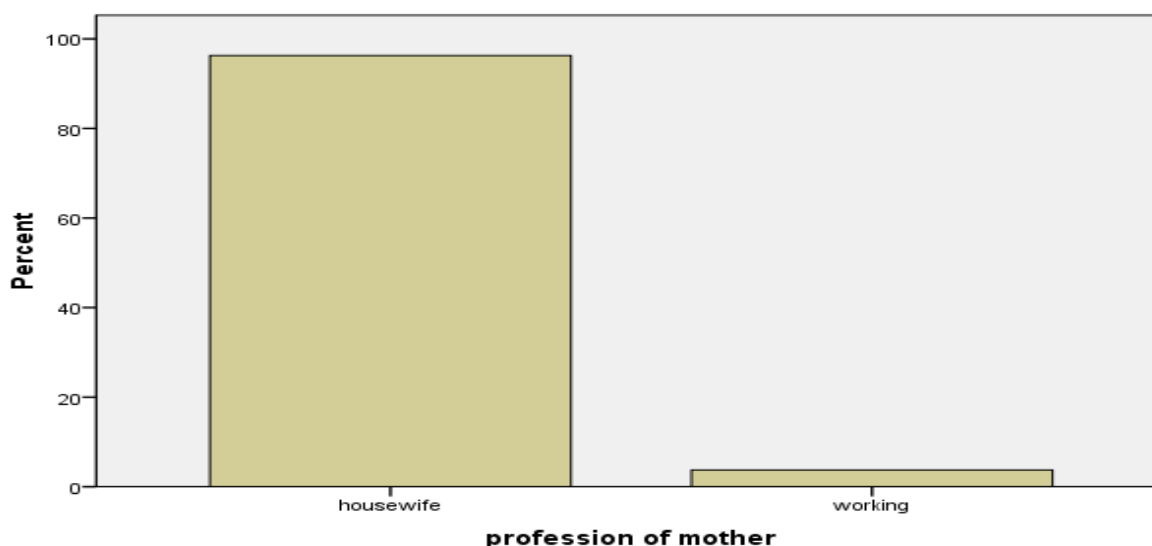
**Table 1.3** father literacy rate

Education	Frequency	Percent
Illiterate	45	42.1
Primary	21	19.6
Matric	17	15.9
Intermediate	11	10.3
Graduate	7	6.5
Masters	6	5.6
<b>Total</b>	<b>107</b>	<b>100</b>

The percentages of illiterate, Primary, Matric, Intermediate, Graduate and Master Mothers were 42.1%, 19.6%, 15.9%, 10.3%, 6.5%, 5.6% respectively as shown in Table 1.4

**Table 1.4** mother literacy rate

Education	Frequency	Percent
Illiterate	73	68.2
Primary	16	15
Matric	7	6.5
Intermediate	5	4.7
Graduate	3	2.8
Masters	3	2.8
<b>Total</b>	<b>107</b>	<b>100</b>

**profession of mother**

96.3% mothers were Housewives while 3.7% were working as shown in Fig 1.1. **Fig1.1** Profession of mother

Out of 107, 7 were school going (6.5%) while 100 were not school going (93.5%).

**Table 1.5** School going status of children

School going	Frequency	Percent
Yes	7	6.5
No	100	93.5
<b>Total</b>	<b>107</b>	<b>100</b>

Vaccination results showed that out of 107 patients, 78 were completely vaccinated or under vaccination (72.9%) while 29 were not vaccinated (27.1%) as shown in Table 1.6

**Table 1.6** EPI vaccination status of child

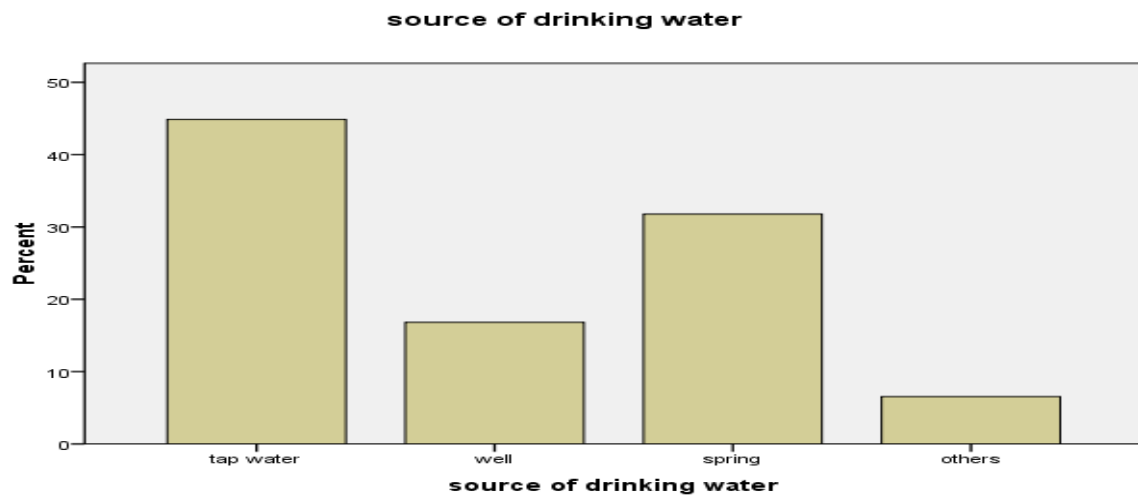
Vaccination	Frequency	Percent
Yes	78	72.9
No	29	27.1
<b>Total</b>	<b>107</b>	<b>100</b>

As can be seen in Table 1.7, children admitted with same disease in past were 24(22.4%) and 83(77.6%) were new cases.

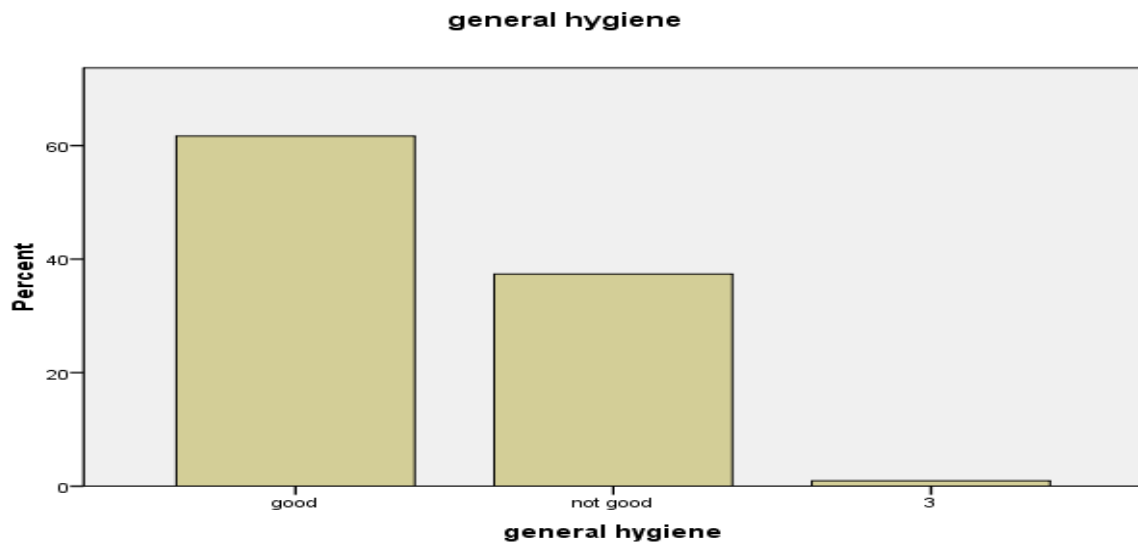
**Table 1.7** child admitted with same disease in past

Admitted with same disease	Frequency	Percent
Yes	24	22.4
No	83	77.6
<b>Total</b>	<b>107</b>	<b>100</b>

The results of our research showed that source of drinking water was 44.9% tap water, 16.8% well, 31.8% spring and from other sources it was 6.5% as shown in fig 1.2

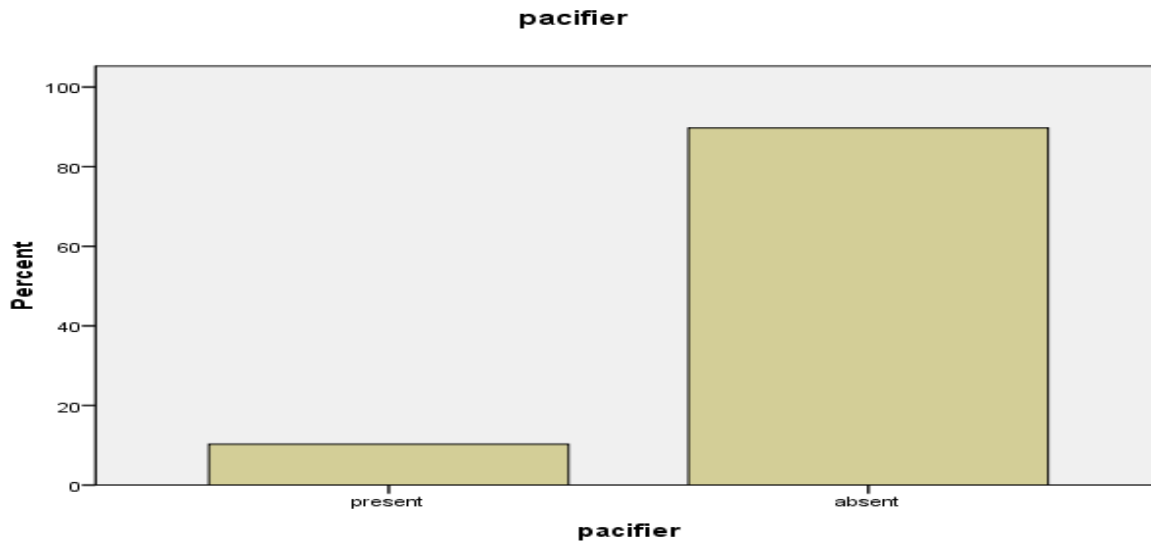


General hygiene of 107 patients was observed and found that general hygiene was good in 61.7% while it was poor in 38.3% as shown in fig 1.3



**Fig 1.3** General Hygiene of patient

Results showed that 10.3% children were having pacifier while 89.7% children didn't have pacifier as shown in fig 1.4



**Fig 1.4** pacifier usage in children

The results of our research showed that frequency of infectious disease among children under 5 years of age in Holy family Hospital. 22.06 % ( 107/485 patients). Malaria was found among 5.6% of patients. The percentages Acute Respiratory Infections, Gastroenteritis, Sepsis, Diarrheas, Encephalitis, Typhoid fever, Leishmaniasis, Pertussis, Tuberculosis, Urinary Tract Infections and Meningitis were 39.2%, 9.3%, 1.9%, 24.3%, 5.6%, 2.8%, 1.9%, 1.9% and 2.8% respectively.

Disease	Frequenc y	Percen t
Malaria	6	5.6
Acute Respiratory Infections	42	39.2
Gastroenteritis	10	9.3
Sepsis	2	1.9
Diarrhea	26	24.3
Encephalitis	6	5.6
Typhoid/ enteric fever	3	2.8
Leishmaniasis	3	2.8
Pertussis	2	1.9
Tuberculosis	2	1.9
Urinary Tract Infections	2	1.9
Meningitis	3	2.8
<b>Total</b>	<b>107</b>	<b>100</b>

**Table 1.8** Frequency of individual infectious diseases

#### DISCUSSION:

Our title of research was Frequency of Infectious diseases in children under 5 years of age. This research was done in Holy family hospital Rawalpindi Pediatrics Department. We came across 485 patients out of which 107 were infected. After conducting this research we are of the view that Acute Respiratory Tract Infections are the commonest of all infectious diseases with its prevalence in 39.2% of the children. The risk factors include poor socioeconomic status, illiteracy, malnutrition and lack of immunization thus contributing towards the high morbidity in children<sup>26</sup>. In India, more than 4 lac deaths every year are due to pneumonia accounting for 13%-16% of all deaths in the pediatric hospital admissions<sup>27</sup>. Our research also revealed that diarrhea is also a common infectious disease and rated it as the second most prevalent disease. The percentage of diarrhea in our research sample is 24.3% with frequency of 26 out of 107. Sanitary conditions are one of the major factor causing increased incidence of diarrhea. Diarrhea is the second gravest killer of under five children worldwide<sup>12</sup>. Studies conducted in south west and central Ethiopia revealed that the mortality attributed to diarrhea was 30% and 27%, respectively<sup>22</sup>. By improving sanitary conditions and taking hygienic measures can reduce the burden of diarrheal diseases significantly.

Typhoid is a well known infectious disease notorious for killing millions of children every year<sup>19</sup>. In our study out of 107 patients 3 were suffering from typhoid fever (2.8%). Typhoid fever is a noted cause of

morbidity worldwide with an estimated 21.7 million cases, the bulk of the burden being borne by India, South and Central America and sub-Saharan Africa, all with growing population and poor sanitary conditions.<sup>17</sup>

In our research, we found that out of 107 patients, 6 were suffering from malaria (5.6%). According to the latest estimates in December 2014, there were about 198 million cases of Malaria in 2013 with uncertainty ranges of 124 million to 283 million and an estimated 584000 deaths. Malaria mortality rate have fallen by 47% globally since 2000 and by 54% in WHO African region.

Another disease in our research was Encephalitis which is a viral disease that causes brain tissue inflammation. In our research, there were 6 out of 107 patients making it 5.6%. A typical district general hospital in the UK can expect to see approximately 5 children with encephalitis per year.<sup>15</sup> Encephalitis remains an uncommon acute neurological syndrome in pediatric practice with an estimated annual incidence rate in England of 2.8 per 100,000.<sup>13</sup>

#### CONCLUSION:

From our research “Frequency of infectious diseases among children under 5 years of age in Holy family hospital Rawalpindi”, we concluded that the frequency of various diseases is different. Some diseases are more prevalent than others. The most prevalent disease among children under 5 years of age is Acute Respiratory Tract infection. Other diseases Diarrhea, Gastroenteritis, Malaria, Meningitis, Leishmaniasis, Typhoid fever, Tuberculosis and Urinary Tract infections are present in descending order.

There is geographical difference in the distribution of these diseases more prevalent in rural areas as compared to urban areas. This difference in distribution can be related to the lack of education, health facilities, sanitation, hygiene, clean water in rural areas. It is obvious from our research that the prevalence of infectious disease is less among literate people. So we concluded that there is reverse proportion between literacy and infectious diseases. Nutrition also plays a contributory part in infectious diseases. Better nutrition is helpful in the prevention of infectious diseases among children.

#### REFERENCES:

1. World Health Organization. Infectious diseases. [Cited online]. [Cited 2015 August 9]. Available from URL: [www.who.int/topics/infectious\\_diseases/en/](http://www.who.int/topics/infectious_diseases/en/).
2. Wikipedia. Infection. [Cited online]. [Cited 2015 August 9]. Available from URL: <https://en.m.wikipedia.org/wiki/infection>.
3. Mehnaz A. Infectious diseases in children-still leads. JPMA 2009;4(3):1-4.
4. Jaris D, Chinn S, Luezyńska C, Burney P. the association of family size with atopy and atopic disease. Clin Exp Allergy 1997;27:240-245
5. Bodner C, Godder D, Seaton A. Family size, childhood infections and atopic diseases. Thorax 1998;53: 26-32 [Abstract/Free full test]
6. Kramer u heinrej, wiss St M. Wichmann HE, Age of entry to day nursery and allergy in later childhood. Lancet 1998;352:440-454 [Cross Re Medicine Web of Science]
7. Rehmani R. Childhood injury. J Pak Med Assoc 2008;58:293-4.
8. Lundgren, O., and L. Svensson. 2001. Pathogenesis of rotavirus diarrhea. Microbes Infect. 3:1145-1156.
9. Nishio, O., K. Matsui, D. T. Lan, H. Ushijima, and S. Isomura. 2000. Rotavirus infection among infants with diarrhea in Vietnam. Pediatr. Int. 42:422-424.
10.  [Feverish illness in children - Assessment and initial management in children younger than 5 years](#); NICE Guideline (May 2013)
11. Cherian T, Chow J, Sonbol A, Salles S, Laxminarayan R, Jacob T. Acute Respiratory Infections in Children. In: Jamison T, Breman J, Alleyne G, Claeson M, editors, Disease Control Priorities in Developing Countries. 2<sup>nd</sup> ed. Washington DC: Jamison T; 2006.p.1415-20.
12. Wikipedia. Diarrhea. [Cited online]. [Cite 2015 August 5]. Available from. URL: <https://en.m.wikipedia.org/wiki/diarrhea> Acharya D, Prasanna KS, Nair S, Rao RS. Acute respiratory infections in children: A community based longitudinal study in south India. Indian J Public Health. 2003;47:7-13.
13. Jain N, Lodha R, Kabra SK. Upper respiratory tract infections. Indian J Pediatr. 2001;68:1135-8.
14. Christa L, Walker L, Perin J, Martin J, Bochi-Pinto C, Robert E: Diarrhea incidence in low- and middle-income countries in 1990 and 2010: a systematic review.



15. Atkinsor W, Hamborsky J, Melyntyre L, Wolfe S. Epidemiology and Prevention of Vaccine Preventable Diseases. 4<sup>th</sup> ed. Washington DC: Public Health Foundation;2009.
16. Wikipedia. Poliomyelitis. [Cited online]. [Cited 2015 August 5]. Available from URL:<https://en.m.wikipedia.org/wiki/Poliomyelitis>.
17. Wikipedia. Poliomyelitis. [Cited online] Crump JA, Mintz ED. Global trends in typhoid and paratyphoid Fever. Clin Infect Dis. 2010;50:241–6. [PMC free article] [PubMed]
18. Koskiniemi M, Korppi M, Mustonen K, et al. Epidemiology of encephalitis in children. A prospective multicenter study. Eur J Pediatr 1997;156:541-5.
19. Fodor PA, Levin MJ, Weinberg A, et al. atypical herpes simplex virus encephalitis diagnosed by PCR amplify cation of viral DNA from CSF, Neurology 1998;51:554-9
20. Wikipedia. Diphtheria. [Cited online] [Cited 2015 August 8]. Available from URL:<https://en.n.wikipedia.org/wiki/Diphtheria>.
21. Wikipedia. Tetanus. [Cited online] [Cited 2015 October 29]. Available from URL:<https://en.m.wikipedia.org/wiki/Tetanus>
22. Theodore R, Thompson J, Wall C, BecroftD,Robinson E, Clark P, et al. Dietary patterns of New Zealand European preschool children. N Z Med J 2006;119:98-120
23. Finlay JE, Ozaltin E, Canning D. The association of maternal age with infant mortality, child anthropometric failure, diarrhoea and anaemia, evidence from 55 low- and middle-income countries. BMJ Open 2011;1:000226-34.
24. Khor GL. Update on the prevalence of malnutrition among children in Asia. Nepal Med Coll J 2003;5:113-22.
25. Okolo SN, Adewumi YB, Okonjo MC. Current breastfeeding knowledge, attitude and practices of mothers in five rural communities in the savannah region of Nigeria. J Trop Paediatr. 1999; 45: 323–326.
26. Onis DE, Mercedes, Comparison of the World Health Organization (WHO) Child Growth Standards and the National Center for Health Statistics/WHO International Growth Reference, Implications for child health programmes. Pub Health Nut 2006;9:942–947.
27. Sondorp E, Checchi F, Bornemisza O, Taylor C. The use of epidemiological tools in conflictaffected populations. Wei Sheng Yan Jiu 2008;27:28-31