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RESEARCH ARTICLE

Evaluation Of Parents Knowledge About The Dangerous Effect Of Excessive Use Of Antibiotics On Children With URTIs In Jeddah City.

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Abstract

Background:- Upper respiratory tract infections (URTIs) occur most commonly among children and most of these infections are self-limiting with a very low risk of complications and its management consist of self-care and symptomatic treatment.

Objectives:- To examine assess parental knowledge about the antibiotic use in the treatment of childhood upper respiratory tract infections (URTIs), Saudi Arabia.

Methods:- A Pre-formed Self-administered questionnaire was conducted among the parents of children with URTIs of Jeddah City.

Results:- A total of 385 parents from Jeddah City were included, of them 325 were females. Overall, 69 members of all interviewed parents had satisfactory knowledge on antibiotic use but 316 parents which represents the majority of subjects had poor knowledge. Univariate analysis showed that female was found to be the only variable that associated with satisfactory knowledge.

Conclusion:- The knowledge of Parents in this study showed a poor knowledge on antibiotic use, which is significantly dependent on female gender.

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Background:-

Antibiotics have been used for the last 70 years to treat patients who have infectious diseases⁽¹⁾. Antibiotics are targeted to kill or inhibit the growth of bacteria and have no effect on viral agents. Antibiotics are among the most commonly prescribed drugs used in human medicine and can be lifesaving drugs. 50% of the antibiotics prescribed is not even necessary and it is not needed⁽²⁾.

Unfortunately, they are often inappropriately used to treat viral infections such as upper respiratory tract infections (URTIs). URTIs are usually self-limiting and resolve in the same amount of time regardless of antibiotic consumption⁽³⁾. Thus, using antibiotics to treat these viral infections is considered a misuse of antibiotics. URTIs prevalence is high between children so they are usually the group which use antibiotics the most. It is currently considered to be one of the major worldwide public health issues⁽⁴⁾.

The bacterial drug resistance seems to be the main problem antibiotics misuse has caused. Antimicrobial resistance is the ability of microbes to resist the effects of drugs – that is, the germs are not killed, and their growth is not stopped. The threat is real and needs serious actions from the communities and governments⁽¹⁾. This misuse may be due to reasons related to: patients, parents or guardians, or the medical practitioner. Several studies have discussed

the reasons associated with antibiotics overuse. These include: attitudes, beliefs, knowledge of antibiotic use^(5, 6), behaviors (e.g. over-the-counter medication and self-medication)⁽⁷⁾. Patients' perceptions regarding patient-doctor interaction, patient satisfaction, and patients' experience with antibiotics⁽⁷⁾. It is important to assess the situation in order to solve the problem. In this paper our goal is to assess the parent's role in antibiotics misuse in children with URTIs in Jeddah city which is a big city in the WEST of Saudi Arabia. Measuring the parent's knowledge, attitudes, behaviors, and beliefs about antibiotics will help in the assessment of the situation burdens are attributable.

The overall aim of the present work was to study the parents' knowledge about the dangerous effect of excessive use of antibiotics on children with URTIs in Jeddah City.

Rational:-

The intervention of antibiotics has marked an important milestone in the history of medicine. The role of antibiotics in reducing the mortality and morbidity of diseases caused by bacteria is beyond any doubt. The challenge to the medical community is to maintain the effectiveness of antibiotics. When used inappropriately, antibiotics may lose its healing power as bacteria develop resistance.

Objectives:-

General objectives:

- 1- To decrease the overuse of antibiotics in Jeddah city
- 2- To decrease the incidence of super-infections in Jeddah city
- 3- To decrease the incidence of hospital Acquired infections in Jeddah city

Specific objective:

- 1- To assess the parent's knowledge, attitudes, behaviors, and beliefs about antibiotics in Jeddah.

Methods:-

Study design:-

It is community based, descriptive study.

Setting and data collection:-

This survey analysis among community population was conducted in Jeddah city. A pre-formed self-administered questionnaire was distributed to Parents of children with UTRIs.

Sample size:-

Subjects were chosen according to geographical and sex distribution. Sample size was calculated based on web-site calculator, taking the total size of Jeddah population (3,976,000), confidence level (95%) and margin error (5%) to be 385⁽⁸⁾.

Study population:-

Parents in Jeddah city and their children had URTIs were included.

Study tools:-

The tool used was Pre-formed Self-administered questionnaire that requires information about.

- 1- Demographics including age, gender, education level.
- 2- Self-administrated questionnaire:

To assess the knowledge of parents regarding to the antibiotic use, including the basic concepts of antibiotics and indications for their use, methods of administration, and side effects.

In the questionnaire patients' knowledge of anti-biotic abuse was assessed using 12 questions relating to the prescriber, course, and need of use. Then scored by assigning one point for each correct response. The anti-biotic abuse knowledge score was calculated as a continuous variable by summing the participant's number with a maximum obtainable correct score of 12 for each respondent.

Limitation of the study:-

- This study was carried out on only 385 parents, and limitations to generalizability are inevitable.
- Samples readiness in participating.

Ethical considerations:-

Informed consent was obtained from all the participating parents in the study. Participants were made aware that they could withdraw at any time.

Statistical analysis:-

Data were entered into the Statistical Package for Social Sciences (SPSS, version 24, SPSS, Chicago, IL, U.S.A.) and descriptive analysis conducted. The results were reported as percentage (95% confidence interval). The internal consistency was assessed using Cronbach's α test.

Association of respondents' characteristics with about anti-biotic abuse anti-biotic abuse hazard, was evaluated using univariate logistic regression. Results were reported showing odds ratio (OR) and 95% confidence interval. Statistical significance was accepted at $p < 0.05$. The dependent variables: knowledge of anti-biotic abuse risk (1 = Poor knowledge and 0= good knowledge). The following independent variables were included: (1) age: ≤ 30 years, [31–30 years] and [31 \geq 41 years] (2) gender: males and females; (3) level of education: Collage, High School and Middle and Elementary School.

Results:-

Demographics of the studied subjects:-

The socio-demographic characteristics were shown in Table. 1.

Table 1. Socio-Demographic Characteristics of Respondents

	No.	Percentage (%)
≤ 20.00	24	6.4
21.00 - 30.00	181	48.1
31.00 - 40.00	113	30.1
41.00 - 50.00	46	12.2
51.00+	12	3.2
Mean\pmSD (Min.-Max.)	31 \pm 9 (12-60)	
Female	325	85.5%
Male	55	14.5%
Collage	287	75.5%
High School	73	19.2%
Middle School	14	3.7%
Elementary School	6	1.6%

This study included total of 385 subjects who approved to answer the questionnaire. The range of age was from 12 to 60 years with a mean 31 years old. About 6.4% of subjects were less than 20 years old, 48.1% of participants were from 21-30 years old, 30.1% were from 31-40% years old, 12.2% ranged from 41-50 years old and 3.2% were more than 51 years old.

This study included 85.5% females and only 14.5% were males.

The study population represents a highly educated group of people, with 75.5% have completed college, 19.2% completed high school, 3.7% completed middle school and 1.6% have been to elementary school.

Responses to questions of knowledge assessment questionnaire (Table. 2& Figure. 1):

Table 2:- Responses to questions on assessment level of awareness toward excessive use of Antibiotics:

	No	Yes
Q1: Do you use antibiotic for your children without the advice of a doctor?	266 (70.4%)	112 (29.6%)
Q2: Is fever a strong motivation for the use of the antibiotic?	249 (66.2%)	127 (33.8%)
Q3: Do you usually complete the course (period specified for use by a physician) of antibiotic?	117 (31.0%)	260 (69.0%)
Q4: Have you ever heard of antibiotic resistance of bacteria?	134 (35.6%)	242 (64.4%)
Q5: Do you think that the bacterial resistant to antibiotics appear in the case of non-completion of the antibiotic course?	116 (31.0%)	258 (69.0%)
Q6: Taking the antibiotic often described by?	Pharmacist	58 (15.4%)
	Doctor	268 (71.1%)
	Person Who used it before	14 (3.7%)
	Self	37 (9.8%)
Q7: What are the symptoms that makes you give your children antibiotics?	Fever	105 (28.3%)
	Diarrhea	14 (3.8%)
	Tonsillitis	235 (63.3%)
	Rhinitis	17 (4.6%)
Q8: what do you depend on while choosing to buy a certain antibiotic?	Price	8 (2.1%)
	Pharmacist	49 (13.0%)
	Doctor	273 (72.2%)
	Person Who used it before	20 (5.3%)
	Commonly Used	28 (7.4%)
Q9: Do you see a doctor in case of treatment failure?	36 (12.0%)	265 (88.0%)
Q10: What is the period in which they define treatment failure?	1-3 Day	68 (22.4%)
	4-6 Day	92 (30.3%)
	1 Week	144 (47.4%)
Q11: Do you know what are the risks and complications of using antibiotics?	93 (30.9%)	208 (69.1%)
Q12: Do you know that antibiotics may interfere with some used drugs?	72 (23.9%)	229 (76.1%)

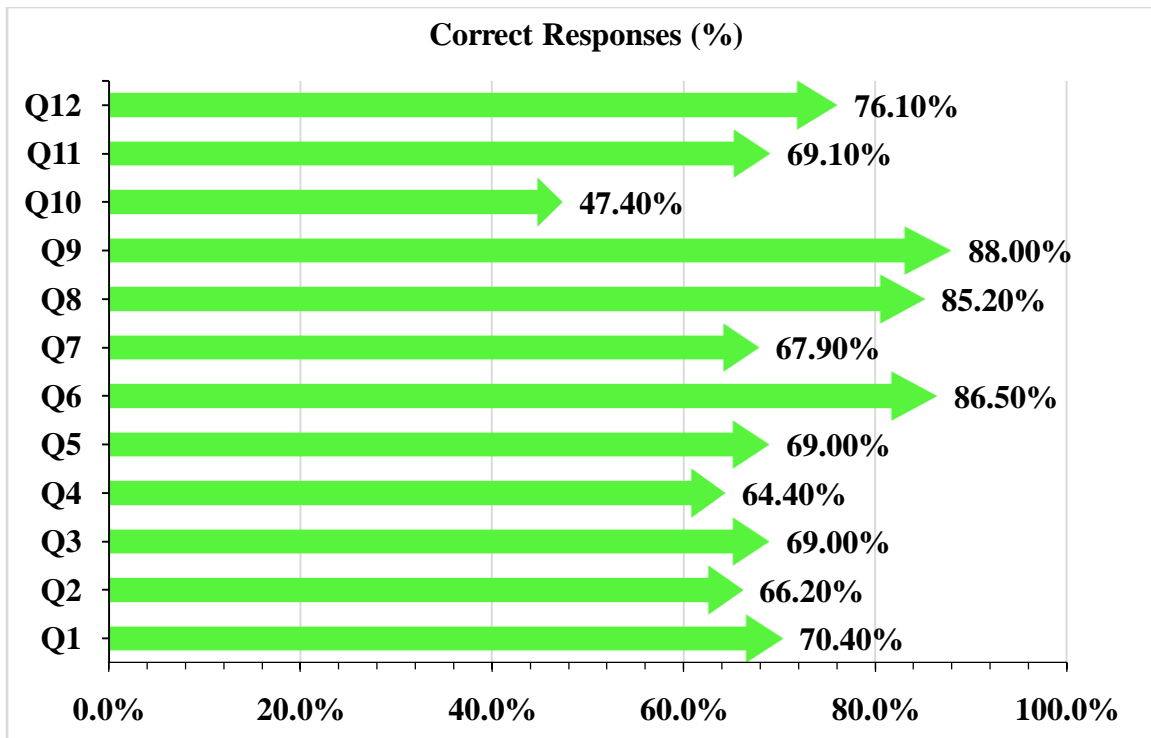


Figure 1:- Responses to questions which corresponds to (%) of patients answered correctly.

Table. 2 indicated the response of participants to the knowledge questionnaire about the use of antibiotics. Overall, 70.4% of the parents in the study didn't give their children antibiotic without advice from doctors as well as 66.2% didn't rate fever or high temperature as a motivation for using antibiotics.

Of the 385 parents responding, 69.0% of them usually complete the antibiotic course and 64.4% of parents believed that they had good knowledge on antibiotic resistance of bacteria, and 69.0% of them thought that non completion of the antibiotic course may lead to antibiotic resistance of bacteria. The main source for parents to obtain information on antibiotic use was from physicians (71.1%), and followed by pharmacy staff (15.4%), 9.8% was self-described and 3.7% take antibiotics according to person who used it before.

In addition, when parents were asked specifically about the most serious symptoms that would have to be present in order for them to buy a certain antibiotic in the case of URIs, 63.3 and 28.3 % of symptoms were tonsillitis and fever, respectively, often accompanied by other symptoms.

The majority of subjects depend on the doctor's advice (72.2%) to buy antibiotic followed by 13.0% depend on pharmacist. Price, the persons who used antibiotic before and commonly used antibiotics were the least percentages of dependence when buying antibiotics.

If treatment failed, 88.0% of participants go to seek doctor's advice. Also most of parents define the failure period to be 1 week (47.4%), followed by 30.3% of them thought that the treatment failure period was 4-6 days and 22.4% was from 1-3 days.

Only 30.9% of parents thought that antibiotics did not cause any harmful side effects, while 69.1% were certain that antibiotics might cause many harmful adverse effects and also the majority (76.1%) know about the interference of antibiotics with other drugs.

Assessment of knowledge of participants regarding to the risks of excessive use of antibiotics:

The mean knowledge score was 7.8 out of 12 for all subjects and it as considered as poor knowledge (Table. 3). Also, 316 parents which represents the majority of subjects had poor knowledge however, only 69 had good knowledge (Figure.2).

Table 3:- Knowledge of participants regarding to the risks of excessive use of antibiotics

	Knowledge Score
Mean± SD	7.80±2.83
Min.- Max.	0-12
Good Knowledge (≥ 85%)	69 (17.9%)
Poor knowledge (≤84%)	316 (82.1%)

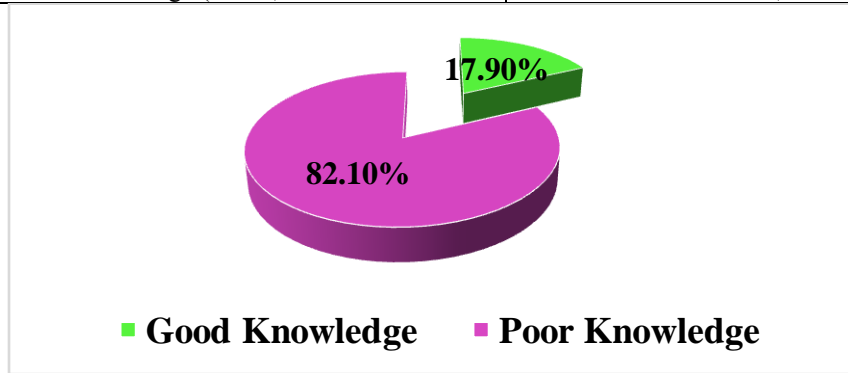


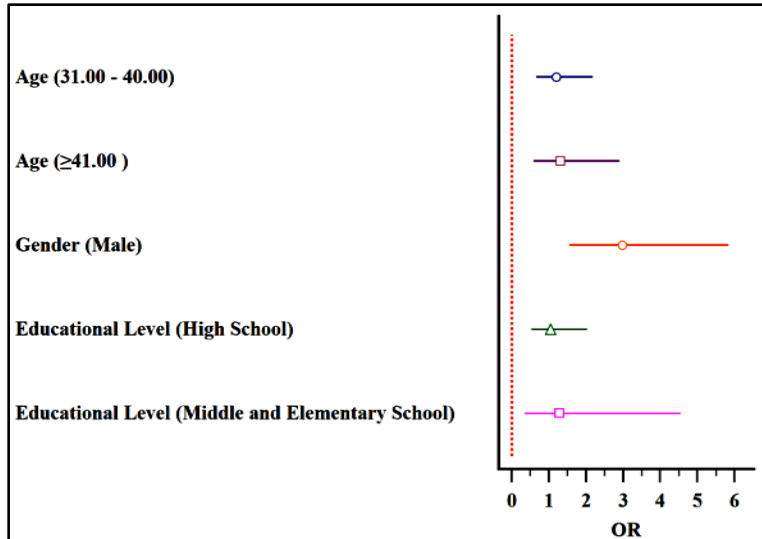
Figure 2:- Respondent’s Knowledge about Anti-biotic Abuse risk

Association between knowledge and demographics of included participants:-

Table. 4 showed the association between knowledge and subject’s demographics. This study showed that there was no significant association between neither age nor educational level with demographic variables of the participants (P >0.05). On the other hand, the female gender was associated with higher levels of knowledge than males and achieved statistical significance (p <0.0001) association. Remarkably, females had higher levels of knowledge due to their higher interaction with their children (Figure. 3).

Table. 4:- Univariate logistic regression model for association between antibiotic use knowledge and socio-demographic variables:

	Good(n=69)		Poor(n=316)		OR	95%CI	P-value
≤30.00	40	19.5%	165	80.5%	1	Reference	0.718
31.00 - 40.00	19	16.8%	94	83.2%	1.20	0.66-2.19	0.554
≥41.00	9	15.5%	49	84.5%	1.32	0.60-2.91	0.491
Female	156	48.0%	169	52.0%	1	Reference	0.0007
Male	13	23.6%	42	76.4%	2.98	1.55-5.84	
Collage	53	18.5%	234	81.5%	1	Reference	0.924
High School	13	17.8%	60	82.2%	1.05	0.54-2.04	0.897
Middle and Elementary School	3	15.0%	17	85.0%	1.28	0.36-4.54	0.699



OR; Odds Ratio, 95% CI: Confidence Interval

Figure 3:- Forest plot illustrating the odd ratios with 95% confidence intervals of the different socio-demographic predictors for Respondent's Knowledge about antibiotic use.

Discussion and Conclusion:-

The study assessed the parents knowledge that influence the use of antibiotics in children. Knowledge and beliefs of parents were assessed using a questionnaire to study the behaviors, antibiotics adherence, seeking information, and awareness about antibiotic resistance. All of these aspects were tested in this study against a set of demographic and child health-related aspects.

Antibiotics are helpful in treating bacterial infections, but have been widely used inappropriately to treat viral infections such as most Upper Respiratory Tract Infections (URTIs) otherwise known as the common cold infection, the most common infections around the world⁽⁹⁻¹²⁾.

This study showed that the majority of population had poor knowledge however prevalence of higher levels of education. This study was in agreement with a recent study that was conducted at Taif City, Saudi Arabia where they found that had poor parents knowledge on antibiotic use however it was significantly dependent on parents' level of education⁽¹³⁾.

Comparatively, other researchers reported high level of knowledge among 60% of caregivers interviewed to assess their KAP on the same topic⁽¹⁴⁾. Also, in contrast study in Saudi Arabia showed that most parents in the study show good-to-moderate awareness about antibiotic resistance⁽¹⁵⁾; similar results have been documented in other studies^(16, 17).

The parents here in this study trusted both the physician and the pharmacist as top sources of information about antibiotic use and the least were the common use and self-administered antibiotics. In consistence with these results, this was a positive finding that parents seek physician and pharmacist advice and this can be utilized for the distribution of health education in the future⁽¹³⁾.

Respondents in this research ranked tonsillitis and fever as the most common symptoms that enhance them to use antibiotics. In agreement with this result, the fever was the most common symptom (80.5%) that the child suffers and make them to visit the doctors⁽¹³⁾. Also, other researchers reported that the main symptoms considered important and would drive parents to visit the doctor were earache (84%) and fever (81%)⁽¹⁸⁾. These findings may be highly attributed to the parents' fear of the complication associated with fever beside their lack of knowledge about fever. Parents in Taif were interviewed about their knowledge about fever, which was found to be suboptimal and nearly 38% correctly determined the threshold for defining fever⁽¹⁹⁾.

There was a significant association between good knowledge and female gender also fathers in the current study appear to have lower knowledge and beliefs about the appropriate use of antibiotics in children. This result is consistent with other studies which found that males provided more incorrect information regarding the appropriate use of antibiotics than females^(20, 21). Belongia *et al.* (2002) also found that females have better knowledge and beliefs about the appropriate use of antibiotics in children⁽²²⁾.

The univariate analysis showed no association between the age and knowledge score of the participants. In contrast with our findings, Belongia (2002) found that older parents have better knowledge and beliefs about antibiotics use. Which could be associated with older parents having more years of experience with antibiotics compared to younger parents, and experience leads to better knowledge and beliefs⁽²²⁾.

During this study the knowledge about antibiotic resistance and complications associated with overuse of antibiotics were good despite low knowledge score achieved by the included parents. In agreement, the antibiotics resistance is currently one of the most important growing public health issues worldwide, mainly caused by antibiotics overuse⁽²³⁾. Antibiotic resistance places both the community and the individual at risk⁽²⁴⁾. Teng *et al.* (2004) assert that the inappropriate use or the overuse of antibiotics to treat viral URTIs is one of the main reasons for the development of antibiotic resistance⁽⁹⁾.

In conclusion:-

providing patients and parents with this information will help doctors to give better medical treatment without prescribing unnecessarily antibiotic treatment for URTI. Further research should focus on evaluation of parents' expectations and effective ways to educate the parent about appropriate use of antibiotics in treatment for URTI.

Budget

Item	Price
Transportations	700 SR
Paper work	800 SR
Data collection and analysis	3500 SR
Books	1000SR
Stationaries	1000SR

Work plan

Tasks in the work plan	Time period
Literature review	2 Months
Preparation for data collection	1 Months
Data collection	3 Months
Statistical analysis	1 Months
Discussion of results	2 months
Writing an abstract	1 months

References:-

1. CDC. retrieved from <http://www.cdc.gov/drugresistance/about.html>. 2016.
2. WHO. retrieved from <http://www.who.int/mediacentre/factsheets/fs194/en/>. 2016.
3. Wutzke SE, Artist MA, Kehoe LA, Fletcher M, Mackson JM, Weekes LM. Evaluation of a national programme to reduce inappropriate use of antibiotics for upper respiratory tract infections: effects on consumer awareness, beliefs, attitudes and behaviour in Australia. *Health Promot Int.* 2007;22(1):53-64.
4. Kisuule F, Wright S, Barreto J, Zenilman J. Improving antibiotic utilization among hospitalists: a pilot academic detailing project with a public health approach. *Journal of hospital medicine.* 2008;3(1):64-70.
5. Chan GC, Tang SF. Parental knowledge, attitudes and antibiotic use for acute upper respiratory tract infection in children attending a primary healthcare clinic in Malaysia. *Singapore medical journal.* 2006;47(4):266-70.
6. Mitsi G, Jelastopulu E, Basiaris H, Skoutelis A, Gogos C. Patterns of antibiotic use among adults and parents in the community: a questionnaire-based survey in a Greek urban population. *International journal of antimicrobial agents.* 2005;25(5):439-43.
7. Sarahroodi S, Arzi A, Sawalha A, Ashtarinezhad A. Antibiotics self-medication among southern iranian university students. *IJP-International Journal of Pharmacology.* 2010;6(1):48-52.

8. <http://www.calculator.net/sample-size-calculator.html?type=1&cl=95&ci=5&ps=3%2C976%2C000&x=37&y=6>.
9. Teng CL, Leong KC, Aljunid SM, Cheah M. Antibiotic prescription in upper respiratory tract infections. *Asia Pac Fam Med*. 2004;3(1-2):38-45.
10. He Y, Lin GY, Wang Q, Cai XY, Zhang YH, Lin CX, et al. A 3-year prospective study of the epidemiology of acute respiratory viral infections in hospitalized children in Shenzhen, China. *Influenza Other Respir Viruses*. 2014;8(4):443-51.
11. Lu ZW, Deng JK, Zheng YJ, He YX, Yang WG, Wei JR, et al. [Characteristics of severely and critically ill children with 2009 influenza A (H1N1) virus infection]. *Zhonghua er ke za zhi = Chinese journal of pediatrics*. 2010;48(8):571-4.
12. Wang H, Zheng Y, Deng J, Wang W, Liu P, Yang F, et al. Prevalence of respiratory viruses among children hospitalized from respiratory infections in Shenzhen, China. *Virology*. 2016;13:39.
13. Elbur A, Albarraq A, Abdallah M. Saudi Parents' knowledge, Attitudes and Practices on Antibiotic Use for Upper Respiratory Tract Infections in Children: A population-based Survey; Taif, Kingdom of Saudi Arabia. *JMR*. 2016;2(4):99-103.
14. Parimi N, Pinto Pereira LM, Prabhakar P. Caregivers' practices, knowledge and beliefs of antibiotics in paediatric upper respiratory tract infections in Trinidad and Tobago: a cross-sectional study. *BMC family practice*. 2004;5:28.
15. Alumran A, Hou X-Y, Sun J, Yousef AA, Hurst C. Assessing the construct validity and reliability of the parental perception on antibiotics (PAPA) scales. *BMC public health*. 2014;14(1):1.
16. Larson EL, Dilone J, Garcia M, Smolowitz J. Factors which influence Latino community members to self-prescribe antibiotics. *Nursing research*. 2006;55(2):94-102.
17. Corbett KK, Gonzales R, Leeman-Castillo BA, Flores E, Maselli J, Kafadar K. Appropriate antibiotic use: variation in knowledge and awareness by Hispanic ethnicity and language. *Preventive medicine*. 2005;40(2):162-9.
18. Rousounidis A, Papaevangelou V, Hadjipanayis A, Panagakou S, Theodoridou M, Syrogiannopoulos G, et al. Descriptive study on parents' knowledge, attitudes and practices on antibiotic use and misuse in children with upper respiratory tract infections in Cyprus. *Int J Environ Res Public Health*. 2011;8(8):3246-62.
19. Elbur A. Childhood fever and its management: differences in knowledge and practices between mothers and fathers in Taif; Saudi Arabia. *World Journal of Pharmaceutical Research*. 2014;3(3):4536-48.
20. McNulty CA, Boyle P, Nichols T, Clappison P, Davey P. Don't wear me out--the public's knowledge of and attitudes to antibiotic use. *The Journal of antimicrobial chemotherapy*. 2007;59(4):727-38.
21. Alumran A, Hurst C, Hou X-Y. Antibiotics overuse in children with upper respiratory tract infections in Saudi Arabia: risk factors and potential interventions. *Clinical Medicine and Diagnostics*. 2011;1(1):8-16.
22. Belongia EA, Naimi TS, Gale CM, Besser RE. Antibiotic use and upper respiratory infections: a survey of knowledge, attitudes, and experience in Wisconsin and Minnesota. *Preventive medicine*. 2002;34(3):346-52.
23. CDC. Centers for Disease Control and Prevention. Antibiotic resistance questions & answers. Retrieved September 2013, from www.cdc.gov/getsmart/antibioticuse/antibiotic-resistance-faqs.html#c. 2009.
24. Simasek M, Blandino DA. Treatment of the common cold. *American family physician*. 2007;75(4):515-20.