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Antibiotics use in Children

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Outline

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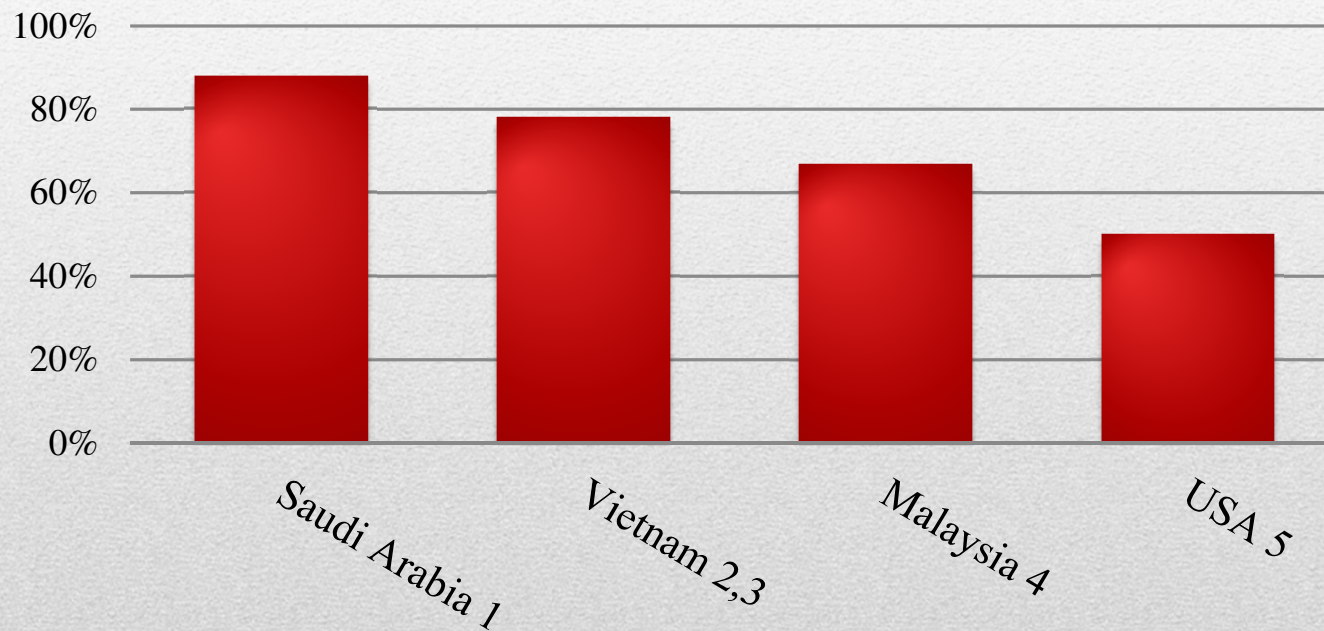
Upper Respiratory Tract Infections (URTIs)

- The most common infectious diseases worldwide (Common cold, Influenza, Rhinorria, and Bronchitis)
 - Usually caused by respiratory viruses, most commonly rhinovirus
 - The average number of common cold episodes in each child annually is 3 to 8 times
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Antibiotics

- Antibiotics treat bacterial infections
 - Often used inappropriately, such as: treatment of viral upper respiratory tract infections
 - This misuse is one of the major public health issues worldwide
 - antibacterial resistance (sometimes fatal)
 - more frequent in children
 - No evidence to support the use of antibiotic treatment for acute bronchitis
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Prevalence of Antibiotic Use for Upper Respiratory Tract Infections Around the World



1 (El-Gilany, 2000), 2 (Hoa et al., 2009), 3 (Nguyen et al., 2011), 4 (Teng et al., 2004), 5 (Belongia et al., 2002)

Problems Associated with Antibiotics Overuse

- Development of antibacterial resistance
- The development of side effects:
 - adverse gastrointestinal effects: drowsiness, diarrhoea and hyperactivity,
 - In some sever cases: Anaphylaxis or Anaphylactic shock, or Kidney poisoning
 - False sense of security - Meningitis
- Rising costs of health services
 - \$2 billion / year in USA → over-the-counter medication for cold symptoms, mainly in children

(West, 2002)

Factors Influencing the Overuse of Antibiotics

1- Parents' Pressure

Physicians irrational prescription to foster good relationship with patients' guardians

2- Lack of Health Education

Due to the lack of time

3- Socio-Economic Status (SES)

- Low SES → low education levels
 - High SES → faster treatment → less time off work
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Factors Influencing the Overuse of Antibiotics

4- Self-Medication

- Turkey and China → almost 60% of Children
 - USA → 54% of children
 - Europe → URTIs most common reason for self-medication
 - **Factors associated with self-medication:**
 - Parents education, age of the child, severity of disease, past experience
 - **More common in developing countries:**
 - Availability, unrestricted access, lack of regulation, and physicians prescribing behavior
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Significance

- Antibiotics in Saudi Arabia should only be dispensed with a prescription
- Pharmacies do not follow regulation strictly
- Data about antibiotics is minimal in Saudi Arabia and none was found in relation to children

(Saudi Food and Drug Authority, 2013), (Bawazir, 1992),
(Bin Abdulhak et al., 2011), (Al-Hassan, 2011)

Saudi Arabia

Area: 2 million square kilometers

Population: 27 million in 2008 ¹

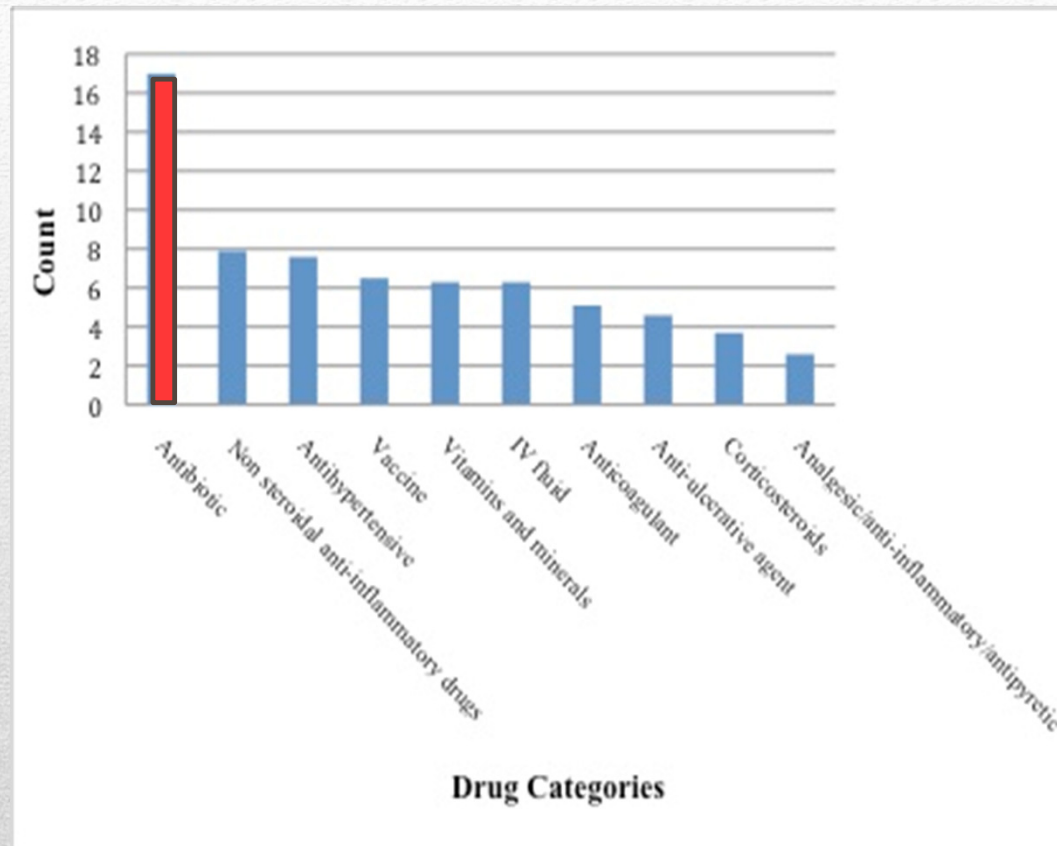
More than 9 million are children (under 18 years old) ²



1 (Central department of statistics and information, 2011)

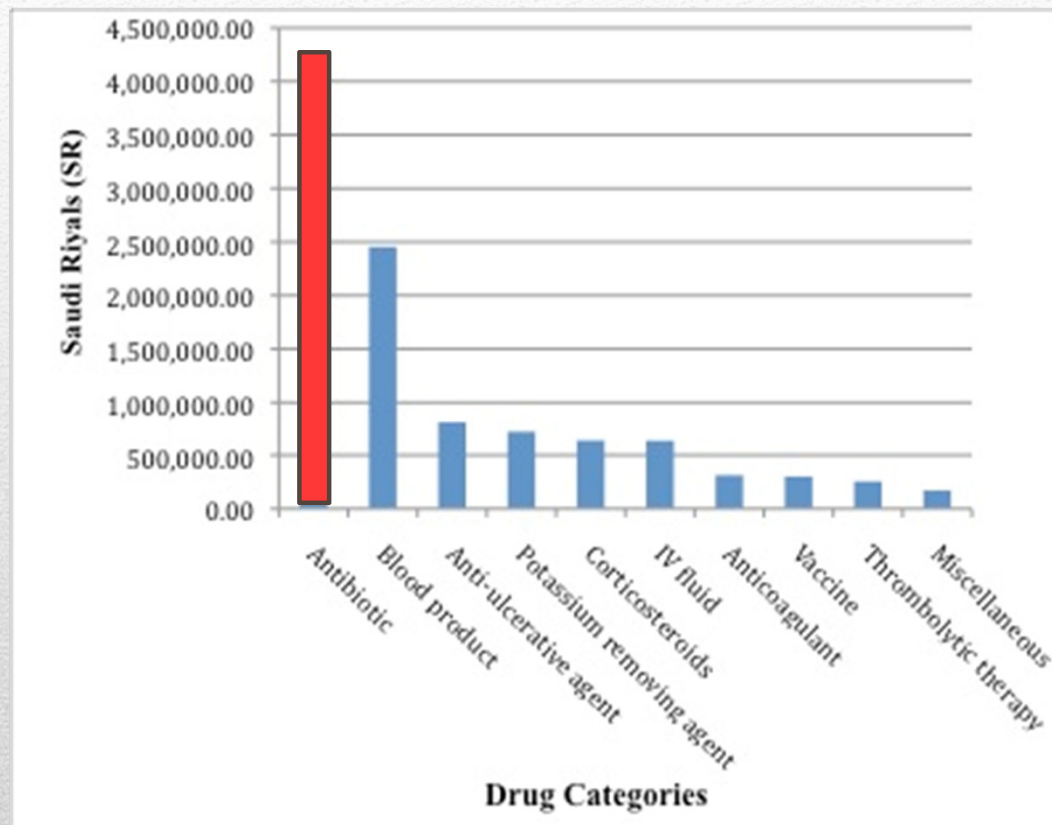
2 (Unicef, 2011).

Antibiotics in Saudi Arabia



The ten most frequent drug categories used in King Fahad University Hospital (KFUH) in the Eastern Province, Saudi Arabia from 1st January 2006 to 30th June 2006

Antibiotics in Saudi Arabia



**The ten most costly drug categories at KFUH
from 1st January 2006 to 30th June 2006**

Aims

This study aims to assess the factors underlying the parental use of antibiotics for children in Saudi Arabia.

Materials and Methods

- **Participants:**
 - Parents of children younger than 12 years old attending schools parental meetings (1104 parents included- 52% were mothers) in the eastern province of Saudi Arabia
 - Stratified random sampling was used → 33 schools included (16 public and 17 private)
 - **Study Design:** Cross-sectional
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Materials and Methods

- **Measures:**
 - The PAPA instrument
 - **Outcome variable:** number of antibiotic courses used in the youngest child in the family during the last year.
 - **Risk factors considered:**
 - Parents' demographic information,
 - Child health-related information,
 - The validated Parents Perceptions on Antibiotics (PAPA) scales
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Materials and Methods

- **Statistical Analysis:**
 - **Ordinal logistic regression**
 - the model was significant (LR $\chi^2(32) = 693.84$, $p < 0.0001$, Pseudo R² = 0.2686)
 - **Purposeful selection of covariates**
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Materials and Methods

- **Statistical Analysis:**
 - Stata SE/v1 (35) and Statistical Package for Social Sciences (SPSS v19).
 - **School clustering effect.**
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The PAPA Instrument

- The construct of the Parental Perceptions on Antibiotics (PAPA) instrument
 1. *Knowledge and beliefs* (10 items),
 2. *Behaviors scale* (5 items),
 3. *Antibiotics Adherence* (5 items),
 4. *Seeking information* (7 items), and
 5. *Awareness about antibiotics resistance* (4 items).
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Work up of the PAPA instrument

Study	Design	Objective
(1) – Preliminary study	Delphi Technique	Content Validity
(2) – Pilot study	Cross-sectional	- Translation validity - Face validity - Item selection process
(3) – Main Study [A]	Cross-sectional	Construct Validity
(4) – Main Study [B]	Cross-sectional	Modeling: Risk/protective factors

The PAPA instrument

Experience with antibiotics and health professionals	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. If my child gets better I can reduce the dose of antibiotics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. If my child's condition is mild I would give the antibiotic according what I see is suitable for to his/her condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Skipping one or two antibiotic doses doesn't make much difference	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. My child will be sick for a longer time if he/she doesn't receive an antibiotic for cough, cold, or flu symptoms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If my child has a cold or cough it is best to get an antibiotic to get rid of it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Children with common cold get better faster when antibiotics are given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. It is not important to follow antibiotics doses strictly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The PAPA instrument

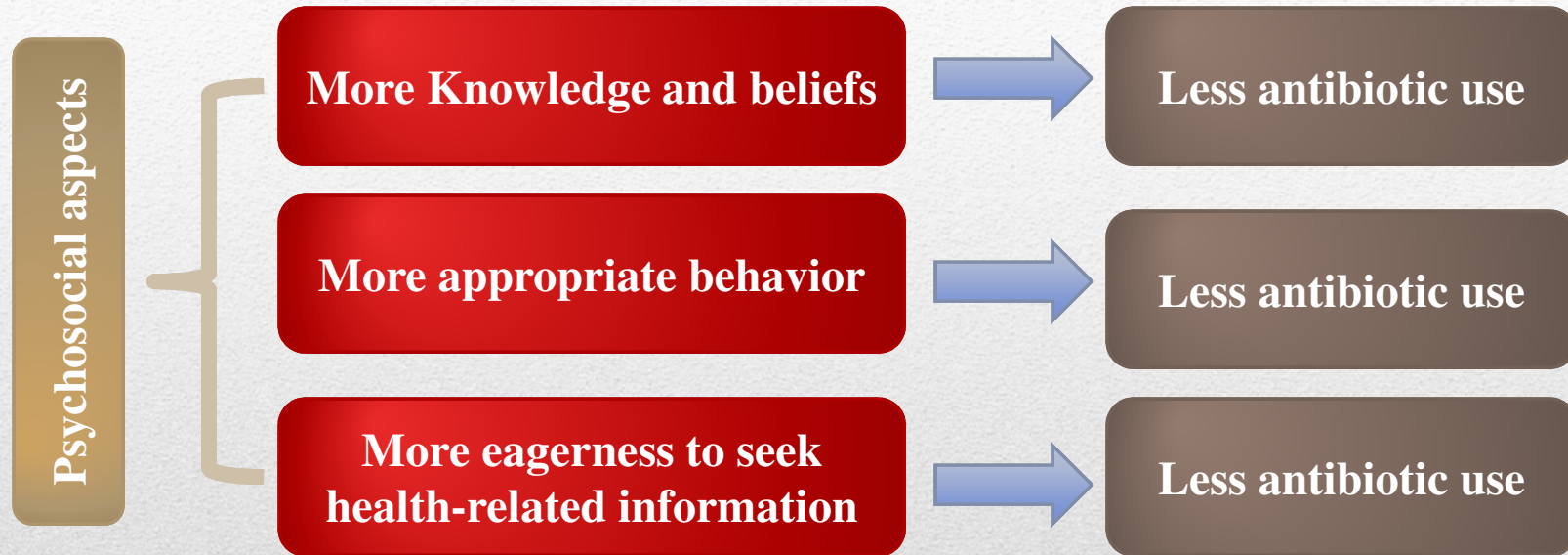
Personal attitudes and beliefs about antibiotics	Never	Rarely	Sometimes	Often	Always
1. When I visit the doctor for my child's common cold I expect prescription for medication including antibiotics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. In the past, Antibiotics have cured my child's cold symptoms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. In the past, I have stopped giving my child an antibiotic because he/she felt better	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. In the past, I have stopped giving my child an antibiotic because my friends/family advised me to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I get my child's antibiotics from the pharmacy without a prescription	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I generally store antibiotics at home for when they are needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. In the past, I have given my child an antibiotic without a prescription when he/she had a high temperature for a few days	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Results

Prevalence of antibiotic use for the youngest child in the past year



Results



Potential confounders:

Age, Education, Monthly income, Employment

Results

χ^2 test of independence

Cold Episodes	Antibiotics use					Total
	Never	Once/yr	2–3 times/yr	4–6 times/yr	> 6 times	
Never	46	7	8	0	0	61
Once/yr	47	156	43	8	3	257
2 – 3 times/yr	38	122	364	44	7	575
4 – 6 times/yr	2	6	54	64	13	139
> 6 times/yr	0	1	5	12	30	48
Total	133	292	474	128	53	1080
	Pearson chi2(16) = 1.0e+03 Pr = 0.000					

Results

Cold Episodes	OR	95% CI	
Never	1		
Once a year	10.31325***	5.028	21.155
2 – 3 times a year	70.49894***	33.875	146.717
4 – 6 times a year	766.5721***	329.001	1786.113
> 6 times a year	6233.587***	2179.287	17830.42

Conclusions and Recommendations

Conclusion:

- First study to our knowledge that produces a reliable and fully validated instrument that measures the psychosocial factors influencing the parental use of antibiotics in children
 - High utility for future research targeted to measure the factors influencing the use of antibiotics in other communities around the world
 - Assisting researchers and policy makers to reduce the use of antibiotics in a community.
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Conclusions and Recommendations

Conclusion:

- The first population-based study in Saudi Arabia that measures the parental use of antibiotics in children
 - High association between the prevalence of antibiotic use and the number of cold episodes in the study population → potential inappropriate use of antibiotics in Saudi Arabia.
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Conclusions and Recommendations

- **Recommendations:**
 - Policy change:
 1. Regulations relating to dispensing antibiotics should be strengthened in Saudi Arabia.
 2. Advocating the appropriate use of antibiotics, and the potential dangers in their misuse in Saudi Arabia and around the world.
 - Interventions can be directed to:
 1. Enhance the parent's knowledge and beliefs about antibiotics and its appropriate use,
 2. Promote better behavior regarding the judicious use of antibiotics, and
 3. Increase people's eagerness to seek more health-related information to expand their health awareness.
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Thank you

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