

## ORIGINAL STUDY

# Knowledge, Attitudes and Practices of Patients Attending West Bay Health Center Towards Upper Respiratory Tract Infections

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## Abstract:

*Upper respiratory tract infections (URI) are very common in general practice. Although viruses cause the majority of URI, many patients expect antibiotic treatment. At one Primary Health Care Center in Qatar, during October - November 2004, eleven hundred and eleven adult patients completed a short questionnaire on demographics, knowledge, attitudes, practices towards URI, and patient satisfaction. Four hundred and forty eight (40.3%) recognized viruses as the most common cause of URI; seven hundred and eighty-eight (70.9%) chose consulting a physician as the first line of action when contracting URI; 721 (64.9%) stated that management should be based on physician's diagnosis while 28% expected antibiotics. A majority of participants acknowledged the importance of counseling in their satisfaction but 49.6% reported dissatisfaction if antibiotics were not prescribed and 31.6% reported seeking antibiotics when not prescribed. Participants expecting antibiotics differed significantly regarding knowledge of causes of URI ( $p = 0.004$ ). There was no significant difference regarding factors affecting satisfaction based on antibiotic expectation.*

*Results highlight the need for public education and counseling on etiology, course, and management of URI by physicians.*

**Keywords:** Knowledge, attitudes, practices, upper respiratory tract infection, antibiotics, satisfaction, education

## Introduction:

Upper respiratory tract infections (URI) comprise one of the most common diagnoses in medical general practice<sup>(1)</sup>. These infections are usually viral in origin and, although they are usually mild and self-limiting, patients tend to consult a physician<sup>(2,3)</sup>. Several studies have reported that patients with URI expect antibiotic treatment<sup>(2,4,5,6)</sup> and it has been shown that physicians tend to prescribe antibiotics for URIs to ensure patient satisfaction despite their knowledge that antibiotics are neither indicated nor effective<sup>(5,7,8)</sup>.

Such prescribing is problematic for several reasons. It has been shown that prescribing antibiotics is associated with repeated patient visits for URIs, which increases the workload in an already overloaded clinic<sup>(9)</sup>; also studies suggest that the factor most strongly associated with prescribing antibiotics is the physician's perception of patient's expectations rather than an explicit request by the patient<sup>(7,8,10)</sup>. For the most part, patient satisfaction can be achieved without prescribing antibiotics. The situation with antibiotic resistance is becoming more serious, warranting a judicious review of prescribing practices especially given the evidence that antibiotics are neither indicated nor effective for URI<sup>(1,11)</sup> and that there is evidence that reducing the use of antibiotics to which organisms are resistant may allow for re-emergence of susceptible strains as the dominant isolates<sup>(12)</sup>.

This study aimed to explore the knowledge, attitudes, and practices of the public with regard to upper respiratory tract infections. The study also examined factors related to patient satisfaction regarding the management of URI. This information will assist in formulating policies concerning URI management in general practice.

## Methods:

The study was conducted at the West Bay Health Center, Doha, Qatar during October and November 2004. Adults visiting during these two months were asked to answer a brief questionnaire relating to URI and covering demographic information, knowledge of causes of URI, attitudes and practices when contracting URI, satisfaction, perceptions and attitudes towards

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management of URI. Attendees at the health center were approached for participation regardless of the reason for their visit and the questionnaire was given to them before their consultation with the physician.

The questionnaire, written in Arabic, was devised by the investigators and was designed to be completed by the subjects independently although reading assistance was provided upon request. The questionnaire was piloted on a sample of patients before the start of the actual study and it was found that it could be completed in less than five minutes. Data analysis was done using Microsoft Excel XP for data transcription and coding as well as for calculating frequencies and percentages. Stata SE version 8.0 was used for associations and tests of significance; (2 was used to compare percentages between groups and multivariate logistic regressions were carried out to study the association between different variables.

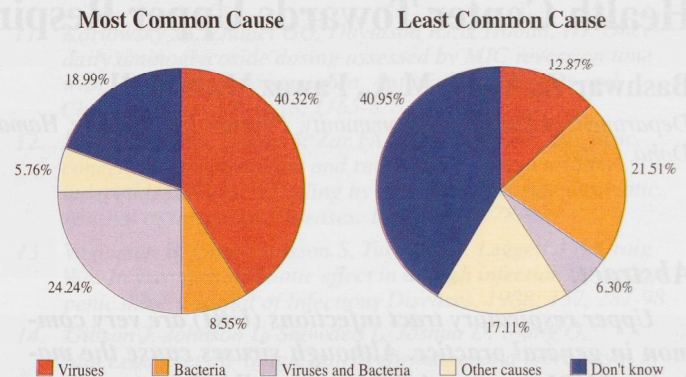
## Results:

Twelve hundred and seventy eight patients were approached for participation, of whom 1111 completed the questionnaire (a participation rate of 87%). Of the 1111 participants, 774 (69.7%) were female, 342 (30.8%) were unemployed, 155 (13.9%) were students, and 597 (53.7%) were employed. Age was defined as a categorical variable with four levels: 18-25 years, 25-32 years, 33-40 years, and 41 years and older; the participants being almost equally divided between these levels (22.4%, 26.2%, 23.8%, and 22.7% respectively, 4.9% of the subjects did not give their age.

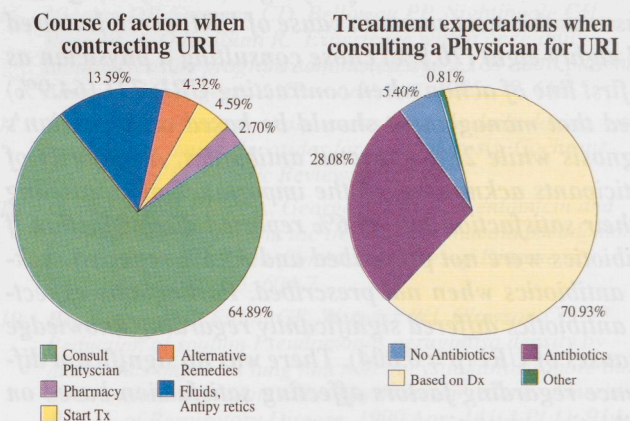
The first two questions tackled knowledge of the most and least common causes of URI. For the most common cause of URI, 448 (40.32%) participants opted for "viruses", while 269 (24.2%) considered that both viruses and bacteria were the most common cause of URI. Multinomial logistic regression showed that older participants were significantly more likely to answer, "don't know" than younger participants ( $\beta = 0.316$ ,  $p < 0.0001$ ). Four hundred and fifty five (40.9%) participants chose the option "don't know" as an answer to the question on the least common cause of URI, while 239 (21.5%) thought bacteria were the least common cause (**Figure 1**). Males were significantly more likely to answer bacteria than females ( $\beta = 0.536$ ,  $p = 0.006$ ).

When asked about their practices upon acquiring URI, 788 (70.9%) participants answered that they consulted a physician, 151 (13.6%) reported that they used antipyretics and fluids as a first course of action, and 30 (2.7%) answered that they consulted a pharmacist. Older participants were more likely and males were less likely to use antipyretics and fluids ( $\beta = 0.22$ ,  $p = 0.02$ , and  $\beta = -0.567$ ,  $p = 0.02$  respectively). Treatment with antibiotics was expected by 312 (28.1%) participants, while 721 (64.9%) reported that they do not have any specific treatment expectation and that treatment should be according to physician's diagnosis, and 60 (5.4%) stated that they expect treatment with-

out the use of antibiotics (**Figure 2**). Older participants were significantly less likely to expect antibiotics ( $\beta = -0.15$ ,  $p = 0.019$ ).



**Figure 1: Knowledge regarding causes of URI among study subjects**



**Figure 2: Patient practices when developing URI**

The majority of participants wanted information and discussion during counseling. One thousand and eighty five (97.7%) participants reported that they prefer that the physician explains to them causes of URI before recommending treatment. In addition, 1081 (97.3%) participants reported that a physician's explanation and education helps them feel comfortable towards the physician, and 980 (88.2%) felt that they will be more comfortable towards treatment when the physician discusses treatment options with them prior to writing a prescription (**Figure 3**). Males were significantly more likely to disagree with the importance of discussing treatment options in their comfort towards the treatment ( $\beta = 0.602$ ,  $p < 0.003$ ).

When asked about their satisfaction with physician's management, 551 (49.6%) stated that they felt dissatisfied if the physician provided reassurance and advice and did not prescribe



any treatment, while 351 (31.6%) reported that they would seek antibiotic prescription if the physician did not give one (**Figure 4**). Older participants were significantly more likely to seek antibiotic prescription when not given by the physician ( $\beta = 0.134$ ,  $p < 0.029$ ). Concerning factors that affect patients' perceptions of the need for antibiotic treatment, 304 (27.4%) cited severity of symptoms, 215 (19.4%) cited previous experience and 163 (14.7%) cited duration of their illness as the factors leading them to believe that antibiotic treatment is needed.

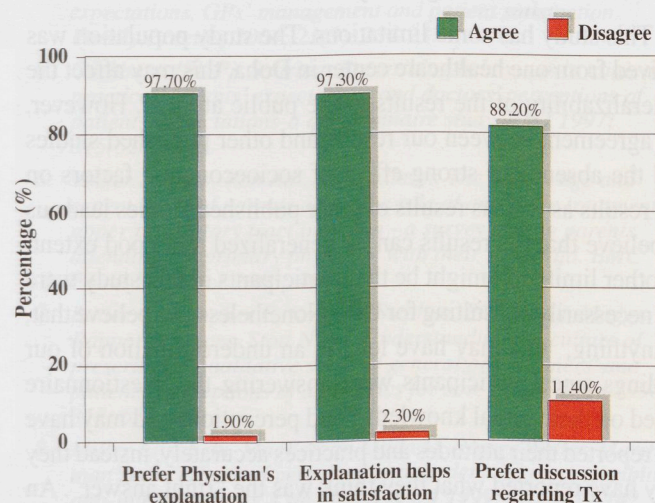


Figure 3: Perceptions towards Physician's counselling

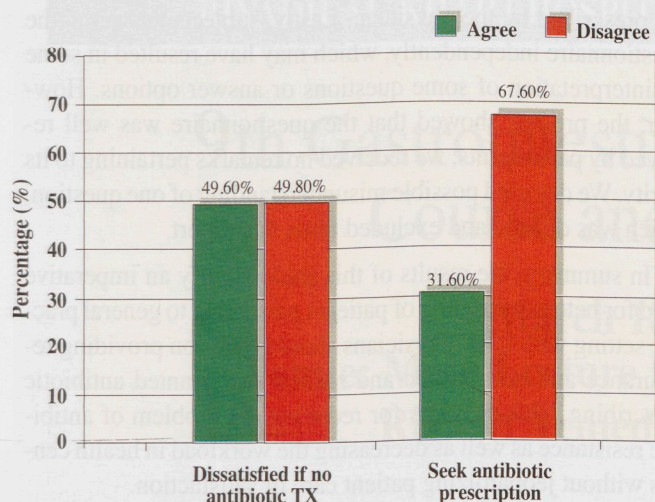


Figure 4: Attitudes towards Physician's management of URI

Apart from what was mentioned above, age, gender, and employment were not significant predictors of the participants' knowledge, attitudes, practices, or satisfaction regarding URI and its management.

When comparing those who reported expecting antibiotic treatment with other participants there was significant differ-

ence in terms of knowledge of most common and least common causes of URI ( $\chi^2 = 28.99$   $p = 0.004$ ) and  $\chi^2 = 16.24$   $p = 0.023$  respectively. More participants expecting antibiotics chose bacteria as the most common cause of URI compared to other participants 14.74% and 6.13% respectively. On the other hand, a higher percentage of those expecting antibiotic treatment chose viruses as the least common cause compared to other participants 17.31% and 11.14% respectively (**Table 1**). Additionally, participants expecting antibiotic treatment differed significantly from other participants with reference to factors that affect patients' perceptions of the need for antibiotic treatment ( $\chi^2 = 36.71$   $p = 0.025$ ). A higher percentage of those expecting antibiotic treatment cited a previous experience compared to other participants (21.79% and 18.40% respectively) while a smaller percentage cited severity of symptoms compared to other participants (21.47% and 29.66% respectively) (**Table 2**). There were no significant differences between those expecting anti-

Table 1: Differences between participants expecting antibiotic treatment and other regarding knowledge of causes of URI

	% of Participants expecting Antibiotics (n=312)	% of Participants not expecting Antibiotics (n=799)
<b>Most Common Cause of URI*</b>		
Viruses	42.31	39.55
Bacteria	14.74	6.13
Viruses and Bacteria	21.47	25.28
Other	5.13	6.01
Don't Know	15.06	20.53
<b>Least Common Cause of URI**</b>		
Viruses	17.31	11.14
Bacteria	22.76	21.03
Viruses and Bacteria	6.09	6.68
Other	12.18	19.02
Don't Know	41.35	40.80

\* Significantly different between the 2 groups  $p = 0.004$

\*\*Significantly different between the 2 groups  $p = 0.023$

Table 2: \*Differences between participants expecting antibiotic treatment and other regarding factors that affect patients' perceptions of the need for antibiotic treatment

	% of Participants expecting Antibiotics (n=312)	% of Participants not expecting Antibiotics (n=799)
Previous experience	21.79	18.40
Duration of illness	15.38	14.39
Family and friend's advice	2.56	3.25
Other	3.21	5.38

\* Difference is significant  $p = 0.025$



otics and other participants concerning satisfaction with physicians' management or their views regarding the importance of counseling with the physician.

## Discussion:

Our study explores an important issue in primary health care practice. Upper respiratory tract infections represent one of the most common maladies that bring patients to the physician's office. It has been estimated that, in the United States, URIs account for 21 million physician visits and 12 million antibiotic prescriptions annually at an estimated cost of \$37.5 million for antibiotics alone. In addition, these infections are associated with other costs as they cause 23 million lost workdays<sup>(3)</sup>.

Our results show that 70.9% of participants consult a physician when they develop URI while only 28.1% report expecting antibiotics. These results are in agreement with internationally published studies on this topic<sup>(2,4,6,7)</sup>; the majority of patients do not expect antibiotic treatment for URI; patients are actually more interested in reassurance, and treatment that provides relief from their symptoms. The majority of participants favored discussion with the physician about causes, course, and management of URI. This also concurs with findings in the literature that patients usually need reassurance; they need to know that their symptoms are not due to a more serious disease<sup>(2)</sup>.

Approximately half of the participants reported no dissatisfaction if the physician did not give any prescription at all and provided only information, reassurance, and advice. It has been shown that the stronger predictor of patient satisfaction is actually physician counseling that provides reassurance and education. In addition, it was shown that physicians, generally, overestimate patients' expectations of antibiotics and thus over-prescribe antibiotics thinking that they are doing that in the interest of patient-physician relationship and patient satisfaction<sup>(7,8,10,13)</sup>.

Participants expecting antibiotic treatment differed significantly from other participants in their knowledge of causes of URI, with a higher percentage of them thinking that the most common cause is bacteria. Although this might provide some justification to their expectation, studies have shown that explaining the differences between bacteria and viruses, and the role of antibiotics in the treatment of each can be confusing to patients. Instead, explaining that antibiotic treatment would not modify symptoms and is associated with side effects might be more useful in influencing patients' expectations and views regarding antibiotics.

An important result in our study is that a higher percentage of participants expecting antibiotics cited a previous experience as a factor affecting their perception of the need for antibiotics compared to other participants. This is parallel to findings of other studies that described a "medicalising effect of prescribing antibiotics"<sup>(9)</sup>. It was argued that physicians' prescription

of antibiotics for URI is actually causing a cycle of a revisiting physician's office for URI and expecting antibiotic treatment for each episode of URI. Physicians who cite time constraints for inadequate counseling and patient education may possibly be exacerbating their time problem by creating a cycle of unnecessary visits because of their antibiotics prescribing behavior. It was argued that spending more time on listening and providing information may reduce the prescribing of antibiotics<sup>(14,15)</sup>, which can lead to decreasing the workload on general practitioners by breaking the cycle of revisits for future URI<sup>(9)</sup>.

This study has some limitations. The study population was derived from one healthcare center in Doha, this may affect the generalizability of the results to the public at large. However, the agreement between our results and other published studies and the absence of strong effect of socioeconomic factors on our results as well as results of other published studies leads us to believe that the results can be generalized to a good extent. Another limitation might be that participants in this study were not necessarily consulting for URI. Nonetheless, we believe that, if anything, this may have lead to an underestimation of our findings since participants were answering the questionnaire based on their actual knowledge and perceptions and may have not reported their attitudes and practices accurately, instead they may have reported what they think was the "right answer". An example from our results is that older people were less likely to report expecting antibiotics when visiting physician's office for URI, yet they were more likely to report seeking antibiotics if not prescribed by the physician. Lastly, subjects answered the questionnaire independently, which may have resulted in some misinterpretation of some questions or answer options. However, the pre-test showed that the questionnaire was well received by participants; we received no remarks pertaining to its clarity. We detected possible misunderstanding of one question, which was deleted and excluded from this report.

In summary, the results of this study signify an imperative need for better counseling of patients presenting to general practice setting with URI. Physicians should focus on providing reassurance and information and reduce unwarranted antibiotic prescribing. This provides for reducing the problem of antibiotic resistance as well as decreasing the workload in health centers without jeopardizing patient care or satisfaction.

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