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SCHOOLCHILDREN'S PERCEPTIONS AND PRACTICES ON THE CAUSES, GRAVITY AND TREATMENT OF ACUTE RESPIRATORY INFECTION, AZUAY, ECUADOR, 2012.

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PERCEPCIONES Y PRÁCTICAS DE LOS ESCOLARES SOBRE LAS CAUSAS, GRAVEDAD Y TRATAMIENTO DE LAS INFECCIONES RESPIRATORIAS AGUDAS. AZUAY, ECUADOR, 2012.

RESUMEN

Objetivo: Identificar las percepciones y prácticas que sobre las causas, gravedad y tratamiento en la infección respiratoria aguda tienen los escolares pertenecientes a distintos estratos sociales de Cuenca en el año 2011.

Metodología: Se realizó un estudio descriptivo en una muestra por conveniencia de 498 escolares del sexto y séptimo año de educación básica, de la zona urbana y rural de Azuay. Se explicó a los responsables del cuidado de los escolares el objetivo de la encuesta y se obtuvo el consentimiento informado. Para el control de calidad se realizó un estudio piloto en otra institución diferente a la del estudio. Los datos fueron analizados en el programa SPSS versión 15, se emplearon frecuencias, porcentajes y medidas de tendencia central como promedio y desvío estándar, además se usó el chi cuadrado para buscar significancia estadística.

Resultado: La edad promedio fue de 10.8 años para la población urbana y rural, y de conglomerados sociales bajo y medio. Los servicios básicos completos estuvieron presentes en la población de zona urbana en el 83.9% y de conglomerado social medio en 73.8%. El conglomerado social bajo y los escolares de género femenino utilizaban con más frecuencia fármacos en el hogar antes de recibir atención médica (42.3% y 43%). Los escolares del género femenino (41.9%) en mayor porcentaje conocían sobre los antibióticos, mientras que los de género masculino tuvieron mejor conocimiento sobre resistencia bacteriana (26.3%). Los centros de salud y escuelas fueron la principal fuente de información sobre los antibióticos y la resistencia bacteriana, aunque el acceso de los niños a la información en general fue bajo. El nivel de conocimiento de las causas y la gravedad de la infección respiratoria aguda fue inadecuado en un alto porcentaje de los niños y las niñas. La mayoría de los escolares, independientemente de su estado, identificaron que "el cuidado en clima frío" es una medida adecuada de prevención y protección contra IRA, pero muy bajo porcentaje de ellos consideraron reposo, no fumar,

alimentación saludable, protección y limpieza nasal como prácticas de autocuidado para prevenir infecciones respiratorias agudas.

Conclusiones: Solo un porcentaje limitado de niños y niñas tienen conocimientos y percepciones apropiadas sobre la gravedad de la infección respiratoria aguda, el uso de antibióticos y la resistencia bacteriana. Los programas de contención de la resistencia bacteriana requieren de un enfoque integral y multilateral que involucre a la comunidad con énfasis en la escuela, los niños, las madres y sus familias.

DeCS: Infecciones del sistema respiratorio, estudiantes/estadística y datos numéricos, terapéutica, Conocimientos, Actitudes y Práctica en Salud, Farmacorresistencia Microbiana. Niño.

ABSTRACT

Objective: To identify the perceptions and practices of schoolchildren belonging to different social strata about the causes, severity, and treatment of acute respiratory infection in Azuay province, Ecuador in 2012.

Methodology: A descriptive study was conducted in a convenience sample of 498 schoolchildren in the sixth and seventh year of primary school, from both urban and rural areas of Azuay. We talk with the responsible people for the schoolchildren care about the aim of the study, and the informed consent was obtained. For quality control we performed a pilot study in a different institution than this study. Data were analyzed using SPSS version 15, we used frequencies, percentages and measures of central tendency such as middle and standard deviation, and chi-square was used to find statistical significance.

Result: The average age of participants was 10.8 years. Children came from both urban and rural regions, and belonged to low or middle social strata. Those of low social strata and of feminine gender more commonly used drugs in the home before receiving medical care (42.3% and 45.0%). A higher percentage of female children (41.9 %) were aware of antibiotics, while the males had better knowledge of bacterial resistance (26.3%). The health-care centers and school were the main source of information on antibiotics and bacterial resistance, although children's access to information overall was low. The level of knowledge of the causes and the severity of acute respiratory infection was inadequate

in a high proportion of both boys and girls. The majority of participating schoolchildren, independent of their status identified that "taking care in cold weather" is an appropriate measure of prevention and protection against ARI, but very low percentages of them considered rest, no smoking, healthy food, protection and nasal cleaning as self-care practices to prevent ARI.

Conclusions: Only a limited percentage of boys and girls had appropriate knowledge and perceptions about the severity of acute respiratory infection, the use of antibiotics and antibiotic resistance. Programs to contain antibiotic resistance require multilateral and comprehensive approaches that involve the community with an emphasis on the school, children, parents and their families.

Key Words: Respiratory Tract Infections, students/statistics & numerical data, Therapeutics, Health Knowledge, Attitudes, Practice, Drug Resistance, Microbial, child.

INTRODUCTION

Respiratory diseases are a global public health problem with high rates of mortality and morbidity⁽¹⁾. Acute respiratory infections (ARI) are responsible for the death of 4 million children a year, mainly in the developing countries of Asia, Africa and Latin America⁽²⁾.

The Pan American Health Organization (PAHO) estimates that mortality caused by acute respiratory infection in children under 5 years (including influenza, pneumonia, bronchitis and bronchiolitis) varies from 16 deaths per 100 000 in Canada to more than 3.000 in Haiti, where these infections contribute between 20 and 25 per cent of the total deaths in this age group⁽²⁾. Among the determining factors are: low weight birth, malnutrition, atmospheric pollution, inadequate health care, low levels of immunization and insufficient availability of antimicrobials⁽³⁻⁸⁾.

ARI, in particular bacterial pneumonia, ranks among the top five causes of death in children under 5 years of age in developing countries. Together with malnutrition this accounts for 60 to 80% of external medical visits and 40 to 70% of the hospitalizations of children under 5 years of age in developing Latin American countries. In addition, the underreporting of data is well known, so that the official figures reported by ministries of health in these countries tend to be lower than the estimated by expert

groups⁽⁹⁾. In Ecuador in 2010 the first cause of mortality in children under 5 years was pneumonia⁽¹⁰⁾.

Numerous studies demonstrate the complexity of this public health problem. A study carried out in 2006 on the relationship between prior use of prescription and self-medication for symptoms of ARI, in 19 European countries established that the association between the use of a prior prescription and self-medication was much stronger when the prior prescription was given for mild symptoms of ARI, because the leftover medicines were used for future similar symptoms⁽¹¹⁾. This problem is more relevant in poor communities with high prevalence of infections, malnutrition, illiteracy and limited access to the health services⁽¹²⁾.

A lot of the antibiotic resistance problem stems from the misuse of antibiotics, particularly excessive use. Tackling inappropriate antibiotic use requires a comprehensive approach including prescribers' training and health education programs⁽¹³⁾. An inclusive process involving communities, patients and health professional should also include children participation.

There is a general agreement at the role that schoolchildren could play as key subjects in the success of educational and health promotion programs. Schoolchildren move between the school, the community and the family, constituting powerful allies and agents of solid and permanent changes⁽⁴⁾. When children learn to take decisions about health in schools it can help to lead healthier lives and will help to spread the health knowledge to other people in their family and community.

In our communities, sometimes children may even have more school education than their parents. They often look after younger ones when they go home, or pass messages to other children who have not gone to school. It is appropriate, therefore, that good health message and health practices should be spread from school to home. Schoolchildren are tomorrow's parents. If they learn and practice good health knowledge and skills now, and develop responsible and caring attitudes they will carry these forward to future generations.

However, there are few studies that report the experience of children's participation in health promotion, the impact on children's own lives and their community^(6, 14).

Until now the majority of programs about the appropriate use of antibiotics (AB) have been concen-

trated on those responsible people for prescribing and on the adult consumer population without the needed flexibility in where, how or when educational interventions are taking place. There has not been an evaluation of the role of schools as agents of education, the enlargement of the meaning of "learner" and "teacher" and the concept of "learning society" where individuals contribute to the learning of others⁽³⁾.

From this perspective and with a long-term view, the challenge should also focus on the involvement of boys and girls to promote their participation as actors in research and their education, in the framework of an ecological strategy to sustain health and the environment for the future. This also means focusing attention on women and their organizations, establishing the differences between the social groups as well as between boys and girls.

Based on this approach, the development of the present study was undertaken as a pilot project prior to its implementation as a health education project in schools with an emphasis on infectious diseases and antibiotic resistance. This study is based on the premise that the perceptions of boys and girls reflects the knowledge and practices prevailing in the family. This can also demonstrate cultural conceptions and possible social differences.

The aim of this study was to identify the perceptions and practices of school children belonging to different social strata about the causes, severity, and treatment of acute respiratory infection in Azuay province, Ecuador in 2011, identifying the particularities and possible differences between the urban and rural school population, as well as social strata and gender differences.

METHODOLOGY

This is a descriptive study. The study population consisted of two groups of schoolchildren attending public educational units. Three schools were located in urban areas and the other three in rural areas (self-sustainable farmer communities) of Azuay, Ecuador.

The children were grouped according to the social status of their family into middle or low social strata. The low social strata included factory and agricultural workers, street sellers, craft practitioners, eventual workers and unemployed. In the middle social strata were included public employees, inde-

pendent professionals, craftsmen owning their own workshop, traders and farmers. The variables used to determine the family social strata included the occupation of main responsible person for the family economy, level of education, income and housing facilities⁽¹⁵⁾.

In total 498 schoolchildren participated in this study. We worked with a convenience sample and all schoolchildren who were enrolled and regularly attending the sixth and seventh year of primary school in 2011. The schools were selected based on the following criteria: urban or rural location; public school; inclusive (boys and girls, ethnic groups, children coming from different social status) and facilities to conduct the study.

Before, during and after the application of the research instruments, several working meetings were held with the authorities and teachers of the respective educational units.

The goal of the survey was explained to those responsible people for the care of the schoolchildren and informed consent was obtained. The researchers that participated in collecting data were commissioned to read the questions to the schoolchildren and to answer the concerns raised by the students.

Informed consent was presented to the Research and Bioethical Committee of University of Cuenca and all the ethical implications were analyzed to continue with the employment of the data collection tool.

Data were collected in a questionnaire developed by the authors. It was a pilot-tested for quality control and language adaptation in a different institution to those in the study. The questionnaire was structured in five parts: demographic and social information, risk factors of the schoolchild, knowledge about the causes of ARI, practices during an episode of ARI, and finally, knowledge about antibiotics and bacterial resistance.

The criteria recommended by the strategy for Integrated Management of Childhood Illnesses (IMCI), developed by the World Health Organization and UNICEF in 1992⁽¹⁶⁻¹⁷⁻¹⁸⁾, were used to identify and classify as appropriate or not the knowledge and perceptions of children in the causes and severity of ARI.

The data were analyzed in the SPSS program (version 15), using frequencies, percentages and measures of central tendency such as average and standard deviation. Chi-square with a p-value less than 0.05 indicated statistical significance.

RESULTS

The average age of children was 10.8 years in both urban and rural areas as well as in the low and middle social strata. In regard to the composition of the family, a trend was observed toward a greater number of family members in rural families and in low social strata. Neither of these were statistically significant. The complete package of basic services (drinking water, electricity and sewerage) was available to a greater percentage of the population in urban areas (83.9%) and to those in the middle social strata (73.8%). These were both statistically significant when compared to the rural and low social strata groups (Table 1).

Children's knowledge of the causes of ARI was classified as appropriate when children mentioned the weather and germs or microbes. The knowledge and perceptions of the boys and girls about the gravity of ARI were analyzed according to the criteria of the IMCI strategy on severe pneumonia which is indicated by the presence of at least one of the six signs of danger: the child refuses to drink, vomits, has seizures, lethargy or is unconscious, suffers from costal retraction or stridor at rest, rapid breathing and wheezing. Girls had the highest percentages of appropriate responses in comparison with boys, but these differences were not significant

TABLE 1. CHARACTERISTICS OF THE SCHOOLCHILDREN POPULATION IN THE STUDY. AZUAY, 2012.

VARIABLES	RESIDENTIAL AREA		SOCIAL STRATA	
	URBAN	RURAL	LOW	MIDDLE
Age	10,8 (±0.8)	10,8 (±0.8)	10.9 (±0.8)	10.8 (±1.0)
Number of persons in the family	5.1 (±2.0)	6.0 (±2.3)	5.6 (±2.2)	5.2 (±2.1)
Complete Basic Services	255(83.9%)*	65 (33.7%)	202(59.9%)**	118 (73.8%)

*p<0.000 **p<0.003

with regard to both the causes and the severity of acute respiratory infection (Table 2).

The majority of schoolchildren, independent of their low or middle social status, their urban or rural residence, identified that "taking care in cold weather" is an appropriate measure of prevention and protection against acute respiratory infection, but very low percentages of them considered rest, no smoking, healthy food, protection and nasal cleaning as self-care practices to prevent ARI. However, during the last episode of flu, fever, cough, runny nose or general malaise, a high percentage (between 37.4% and 45%) of boys and girls consumed medicines before attending health units. Antibiotics were among these medicines (0.3%). This low percentage may be due to the difficulty in identifying the different names of antibiotics (Table 3). Children identified types of drug formulation

such as: pills, tablets, injections, syrups but they did not identify what type of drug was used.

Girls (41.9%) had heard and know about antibiotics more than boys (32.5%); whereas in relation to bacterial resistance, the boys had been informed more than girls. The health-care centers and school were the main source of information in antibiotics and antibiotic resistance, although children accessing information overall was low (table 4).

DISCUSSION

In the present study, the population consisted of children with an average age of 10 years, from both urban and rural populations and from low and middle social strata. The average number of persons per family was 5. Access to a complete package of

TABLE 2. DISTRIBUTION OF 498 SCHOOLCHILDREN ACCORDING TO ADEQUATE KNOWLEDGE OF THE CAUSES, SIGNS OF GRAVITY OF ARI AND GENDER, AZUAY, 2012.

*KNOWLEDGE OF THE CAUSES OF ARI	GENDER		
	MASCULINE n=209 (100%)	FEMININE n=289 (100%)	TOTAL n=498 (100%)
Adequate	123 (58.9%)	189 (65.4%)	312 (62.6%)
Inadequate	86 (41.1%)	100 (34.6%)	186 (37.3%)
**KNOWLEDGE OF SIGNS OF SERIOUS ARI	GENDER		
	MASCULINE n=209 (100%)	FEMININE n=289 (100%)	TOTAL n=498 (100%)
Adequate	39 (18.7%)	64 (22.1%)	103 (20.6%)
Inadequate	170 (81.3%)	225 (77.9%)	395 (79.4%)

*p<0.136 **p<0.343

TABLE 3. DISTRIBUTION OF SCHOOLCHILDREN ACCORDING TO HOME SELF-CARE PRACTICES, AND MEDICINES USED IN AN EPISODE OF ARI BEFORE MEDICAL CONSULTATION, SOCIAL STRATA AND GENDER, AZUAY, 2012.

SELF-CARE PRACTICES IN ARI	SOCIAL STRATA		GENDER	
	LOW n=265 (100%)	MIDDLE n=132 (100%)	MASCULINE (%) n=161 (100%)	FEMININE (%) n=236 (100%)
"Taking care in cold weather"	205 (60.7%)	98 (61.3%)	122 (58.4%)	181 (62.6%)
Rest and hygiene	17 (5.0%)	18 (11.3%)	12 (5.7%)	23 (8.0%)
NO smoking	30 (8.9%)	12 (7.6%)	19 (9.1%)	23 (7.9%)
Healthy food	13 (3.8%)	4 (2.5%)	8 (3.8%)	9 (3.1%)
Medicines taken before medical consultation	n=161 (100%)*	n=72 (100%)	n=89 (100%)**	n=144 (100%)
Medicines	143 (42.3%)	65 (40.6%)	78 (37.4%)	130 (45.0%)
Tradicional Medicine	18 (5.3%)	7 (4.4%)	11 (5.3%)	14 (4.8%)

*p<0.740 **p<0.527

TABLE 4. DISTRIBUTION OF SCHOOLCHILDREN ACCORDING KNOWLEDGE ON ANTIBIOTICS, ANTIBIOTIC RESISTANCE, SOURCE OF INFORMATION AND GENDER. AZUAY, 2012.

	GENDER		
	MASCULINE n=209 (100%)	FEMININE n=289 (100%)	TOTAL n=498 (100%)
*KNOWLEDGE OF ANTIBIOTICS	68 (32.5%)	68 (32.5%)	68 (32.5%)
**KNOWLEDGE OF ANTIBIOTIC RESISTANCE	55 (26.3%)	63 (21.8%)	118(23.6%)
SOURCE OF INFORMATION ON ANTIBIOTIC RESISTANCE	GENDER		
	MASCULINE n=55 (100%)	FEMININE n=63 (100%)	TOTAL n=118 (100%)
Health centres	22 (10.5%)	26 (9.0%)	48(44.0%)
Media	2 (1.0%)	9 (3.1%)	11(10.0%)
Friends/neighbours	10 (4.8%)	13 (4.5%)	23(21.1%)
School	16 (7.7%)	11 (3.8%)	27(24.7%)
Other	2 (1%)	2 (7%)	4 (0.8%)
Not remember	3 (1.4%)	2 (7%)	5 (1%)

*P<0.069 **P<0.360

basic services was higher for those living in urban areas and for those belonging to the middle social strata (83.9% and 73.8%). The differences were statistically significant when compared with those living in the rural areas, or belonging to low social strata.

The differences mentioned are associated with a greater incidence of infant deaths which are concentrated in the low income strata. Two-thirds of all child deaths occur in 40% of households with lower income⁽¹⁹⁾. Some studies have shown that the risk of children of getting sick from ARI dropped as the economic situation of the family improved⁽²⁰⁾. In addition, it has been shown that initiatives to relieve poverty and improve the health of children require the concurrent implementation of measures to improve the educational level of women and girls⁽²¹⁾.

In relation to knowledge about the causes of ARI and the recognition of signs of gravity of severe ARI, girls had better percentage of adequate knowledge for both situations. It may be assumed that being a girl creates a link to the generational transmission of health practices within their homes. Usually, it is the mother with her oldest daughter whose take the sick child to the health center, receive advice and share the responsibility of drug administration at home.

In this sense, many studies have shown that women are important promoters of health education and healthy practices within home, therefore the benefits

of their education is extended to girls, boys and others⁽²²⁻²³⁾. Thus, strengthening the IMCI strategy and increasing the educational level of future mother will be, over the long term, improving the prevention of morbidity among children both in ARI and on a general level⁽⁵⁾.

With respect to self-care practices for ARI, the majority of schoolchildren of both sexes from low and middle social strata considered that "taking care in cold weather" was a measure of protection against acute respiratory infection, although this perception was more prevalent in females (62.6%). This could be influenced by the location of their homes and schools in the Andean region. However, it is known that educational attainment and economic status are determinants for the level of child health, gravity, prevalence and death from ARI⁽²⁴⁻²⁵⁾.

Those from the lower social strata and girls used medicines at home more commonly before receiving medical care. This could be explained by such trends as the lack of access to health services and the lack of appropriate economic income. These oblige them to recycle medicines so as not to have to spend more than what the family group needs and they prefer to incorporate their ancestral medicine to avoid the harmful experiences of the use of medicines that cause fear and distress among children.

Several studies indicate that there is an association between the income of the families and self-medi-

cation⁽²⁶⁻²⁷⁾. A study in Chiclayo-Peru in 2005 established that 44% of the population self-medicate, which coincides with the perception of schoolchildren in our study⁽²⁷⁻²⁸⁻²⁹⁾. In Ecuador the prevalence of self-medication in some studies ranges from 57.8% to 68.4%⁽³⁰⁾. As well, various global studies show that females self-medicate more often⁽⁵⁻³⁰⁻³¹⁻³²⁾ and although the schoolchildren in this study do not directly self-medicate, the girls perceived themselves higher medicines consumers than the boys. It is important to point out the fact that self-medication most often occurs because there are medicines at home that were saved for future use, as shown in several investigations⁽³³⁾.

The girls had better knowledge about antibiotics and boys about bacterial resistance, both receiving information on resistance mainly from the health centers and at school. According to specialists, the phenomenon of antibiotic resistance is causing an escalation in the use of more powerful antibiotics which, in many cases, are more expensive⁽³⁴⁾.

For a long time, it has been known that children have a much better capacity for assimilation. The attitudes, values and practices learned in childhood can remain unchanged until adulthood. It is for this reason that the training of children and their participation in advocacy programs and popular education in health in general, as well as in the use and care of antibiotics to contain antibiotic resistance, should be considered of high priority. Children constitute an inexhaustible resource for the present and the future, and represent a highly sensitive and vulnerable group, but at the same time a source of renewable energy and recreation. They can communicate, share and influence other children: the bigger children influence the smaller, their parents, the family and the community. The knowledge, intellectual skills, and skills acquired at school to solve and understand the everyday problems of life and health of their siblings, the community and the environment will survive and will provide tools for life⁽³⁾.

CONCLUSIONS

How to take care and avoid the inappropriate use of antibiotics in the present? How to avoid the abuse of the new antibiotics in the future? This involves creating widespread awareness and developing awareness in the younger generations, in boys and girls, creating a new paradigm of respect for other forms of life, and restricting and caring for antibiotics as a non-renewable resource. Children and women are essential to this strategy and could provide more rapid results, which certainly would not take more time than that needed to change in health professionals, health systems and for necessary innovation with new technologies. But they could also have a multiplier effect.

Our study shows boys and girls have an inadequate perception of the causes, gravity and treatment of acute respiratory infection, limited knowledge about antibiotics and antibiotics resistance. However, a very important percentage of them used drugs for cough, fever and runny nose. This indicates that there is greater risk for inappropriate use of drugs as the child becomes more independent in their decisions.

The irrational use of medicines is a serious problem in developing countries. It is important to reinforce the system of regulation of sales, but it is also essential to empower community members through promoting people participation and reinforcing popular health education programs.

In this perspective, consider that it is what children think, their perceptions and practices that is an initial step for the construction of local networks, for the definition of health education programs, science education and the promotion of good living. The development of an educational strategy for good living in the present is essential to ensure a sustainable future.

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