Causes, Effects and Control of Respiratory Tract Infections Among Reproductive Age Women in Jalingo Local Government Area of Taraba State-Nigeria

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Abstract
This study examined the causes, effects and control of respiratory tract infections among patients in Jalingo Local Government Area of Taraba State. Data were collected from the primary source using survey research design. A sample of 365 respondents was drawn and used to represent the entire population of the study. The research instrument was validated and tested using Alpha cronbach with the reliability coefficient of 0.90. Data collected were analyzed using descriptive statistics of frequency, simple percentage, mean and standard deviation. The study found that, virus with flu, tobacco smoke, respiratory syncytial virus, indoor air burning from burning fuels, dust and chemicals, bacteria as well as fungal infections and staphylococcus aureus were accepted to be the main causes of respiratory tract infections. While congestive heart failure, respiratory failure, death occurs as a result of negligent to proper treatment, abnormal lung functioning, respiratory arrest and blood infection (sepsis) leading to organ shutdown were identified in this study as the major effects of effects of respiratory tract infections among patients in Jalingo Local Government Area of Taraba State. Recommendations**:** Health professionals and health management should provide adequate vital information to the general public to enlighten them on the preventive measure of respiratory tract infection so as to reduce the menace of the infections to its minimal point as well as promote good health among the populace in the study location and the state as a whole as well as Government and health policy formulators should as a matter of urgency provide substantial and effective measures through programmes and schemes as well as provide adequate vaccines for treatment and management of respiratory tract infections.

Keywords: Respiratory Tract Infections, Effects, Patients, Antibiotics, Prevention.

Introduction

Respiratory tract infection is regarded as one of the most common infection among humans worldwide. Respiratory infections are persistent health problem and being a common reason for consultation and hospitalization, impose an enormous burden on society. The clinical features of respiratory infection differ according to age, sex and comorbidities. Respiratory infection constituted for 34.6% of reported deaths in the southeast area and out of the total 3,941,000 deaths worldwide (WHO, 2017). Respiratory infection is a major health problem representing over 50 million deaths per year attributed to both community-acquired and nosocomial infection, furthermore respiratory diseases accounted for 13.3% of Disability–Adjusted Life Years (DALYs). The etiological agents of respiratory infections vary from area to another as well as their

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antibiotics susceptibility. Among the common bacterial causes of respiratory infections are Streptococcus, Klebsiella, Pseudomonas, Staphylococcus and Haemophilus influenza (WHO, 2017). However, the responsible pathogens are not identified in 50% of the patients despite thorough diagnostic tests are carried out (WHO, 2017). Physicians usually rely on clinical signs and symptoms to diagnose respiratory infections; the microbial etiology is rarely identified. Recommendations of therapy are based on the severity of illness; the probabilities of the pathogens in specific geographical areas, resistance patterns of the most commonly implicated etiological agents and co-morbidities.

Respiratory tract infections (RTIs) are among the most common and important problems in clinical medicine. In developed countries, acute respiratory infections (ARIs) account for the majority of antibiotic prescriptions written, 20% of all medical consultations and over 30% of lost days from work (WHO, 2017). The situation is more spectacular in developing countries where nearly 20% of mortality in children under the age of 5 years can be attributed to Acute Respiratory Infection (WHO, 2017). When a patient is thought to have a respiratory infection, considering the disease features in a sequential manner can help focus the differential diagnosis and expedite specific diagnosis and treatment. The starting point is a basic understanding of the pathophysiology of the respiratory tract and ways in which innate and acquired immune systems interact with microbial pathogens (WHO, 2017).

Pregnancy results in a number of changes that may predispose the pregnant woman to the development of serious respiratory tract infection. Hyperemia and hyper secretion are common characteristic of the respiratory tract mucosa during pregnancy, and these changes may intensify the effect of the initial infection (WHO, 2017). In the case of a viral infection, the excess secretions may predispose the patient to bacterial super infection. Immunologic modulation during pregnancy may also predispose to pulmonary infection (John, 2018). Furthermore, the increased oxygen consumption, elevation of the diaphragm, and decreased functional residual capacity characteristic of pregnancy may increase the likelihood that infection will result in maternal hypoxemia (John, 2018).

Fortunately, most respiratory tract infections during pregnancy are upper respiratory tract viral infections that do not pose a serious threat to the mother or fetus. Lower Respiratory Tract Infections are also viral and self-limiting; pneumonia occurs during pregnancy with an incidence approximating that of the non-pregnant population (John, 2018).

Acute respiratory infections cause a great deal of morbidity and mortality in complex emergencies. Overcrowding, inadequate shelter, inadequate blankets in cold environments, and exposure to indoor cooking fires and smoke promote the spread of respiratory infections. Diphtheria and pertussis vaccination programs can be initiated as indicated by surveillance measures. Respiratory tract infections are the cause of most antibiotic use. Approximately three quarters of all outpatient antimicrobial use is for respiratory infections especially for acute bacterial sinusitis for adults and acute bacterial otitis for children. Although many respiratory infections require antimicrobial therapy for optimal management, most outpatient respiratory infections (e.g., acute bronchitis, nasal pharyngitis, cold, nonspecific upper respiratory tract infection [URI]) are caused by respiratory viruses for which antibiotic use is not warranted. Overuse of antibiotics for both community- and hospital-acquired respiratory infections is a source of great antibiotic abuse and increases the likelihood of further hindering the already high level of antibiotic resistance. The emergence of CA-MRSA in the community and multidrug-resistant gram-negative pathogens (e.g., Acinetobacter, Pseudomonas) in the hospital setting further challenges our ability to successfully treat these infections (WHO, 2017).

Aim and Objectives of the Study

The main aim of this study is to examine the causes, effects and control of respiratory tract infections among women of reproductive age in Jalingo Local Government Area of Taraba State. Thus, the specific objectives sought to:

   i.   Identify the causes of respiratory tract infections among women of reproductive age in Jalingo Local Government Area of Taraba State;
   ii. Examine the effects of respiratory tract infections among women of reproductive age in Jalingo Local Government Area of Taraba State.

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   iii.   Find out suitable measures of controlling respiratory tract infections among women of reproductive age in Jalingo Local Government Area of Taraba State.

Research Questions

This study was guided by the following research questions:

   i.   What are the causes of respiratory tract infections among women of reproductive age in Jalingo Local Government Area of Taraba State?

   ii.   What are the effects of respiratory tract infections among women of reproductive age in Jalingo Local Government Area of Taraba State?

   iii.   What are the suitable measures of controlling respiratory tract infections among women of reproductive age in Jalingo Local Government Area of Taraba State?

Literature Review

Conceptual Clarifications

The Concept of Respiratory Tract Infection

This chapter deals with infections of structures that constitute the upper and lower respiratory tract. The general population commonly experiences upper respiratory tract infections, which are often seen in general practice. Lower respiratory tract infections are less common but are more likely to cause serious illness and death. Diagnosis and specific chemotherapy of respiratory tract infections present a particular challenge to both the clinician and the laboratory staff. Successful preventive strategies are available for several respiratory infections (Adegbola et al., 2020).

The principal function of the respiratory tract is gas exchange. It is therefore constantly exposed to the gaseous environment, including particulate organic material, such as bacteria, viruses and spores. Although the entire respiratory tract is constantly exposed to air, the majority of particles are filtered out in the nasal hairs and by inertial impaction with mucus covered surfaces in the posterior nasopharynx. The epiglottis, its closure reflex and the cough reflex all reduce the risk of microorganisms reaching the lower respiratory tract (Adegbola et al., 2020).

Particles small enough to reach the trachea and bronchi stick to the respiratory mucus lining their walls and are propelled towards the oropharynx by the action of cilia (the 'mucociliary escalator'). Antimicrobial factors present in respiratory secretions further disable inhaled microorganisms. They include lysozyme, lactoferrin and secretory IgA. Particles in the size range 5–10 µm may penetrate further into the lungs and even reach the alveolar air spaces. Here, alveolar macrophages are available to phagocytose potential pathogens, and if these are overwhelmed neutrophils can be recruited via the inflammatory response. The defenses of the respiratory tract are a reflection of its vulnerability to microbial attack. Acquisition of microbial pathogens is primarily by inhalation, but aspiration and mucosal and haematogenous spread also occur (WHO, 2017).

Individuals with healthy lungs rarely have any bacteria beyond the carina. Respiratory pathogens have developed a range of strategies to overcome host defences. Influenza virus, for example, has specific surface antigens that adhere to mucosal epithelial cells. The virus also undergoes periodic genetic reassortment resulting in expression of novel adhesins to which the general population has no effective immunity. Streptococcus pneumoniae and Haemophilus influenzae both produce an enzyme (IgA protease) capable of disabling mucosal IgA (WHO, 2017). These species, other capsulated bacteria and mycobacteria are all resistant to phagocytosis. Penetration of local tissues is usually required before damage occurs, although viruses causing the common cold appear to be an exception. In some lower respiratory tract infections, the host response is the principal cause of damage. Human behaviour can also increase the risk of respiratory infection. Tobacco smoking has this effect by reducing the efficiency of cilia function and by causing the production of more viscous respiratory secretions. Tracheal intubation for prolonged periods in the critically ill bypasses the upper respiratory tract and provides a conduit for microbial access directly into the lungs (Adegbola et al., 2020).

Clinical Management of Respiratory Tract Infection (Pneumonia)

Diagnostic backup is limited and may be entirely absent in many parts of the tropics. Decisions on choice of therapy, mode of delivery, duration of treatment and even whether to admit to hospital must be made with less evidence of the specific (Christian et al., 2018). The history, epidemiology and clinical examination

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may provide helpful clues and should be relied upon much more. Bacterial culture of sputum is unlikely to help and results of poorly collected specimens, processed with limited laboratory facilities may be extremely difficult to interpret (Christian et al., 2018). Chest X-ray if available should be reserved for patients requiring hospital admission or whose infection has failed to resolve on initial therapy. The management will vary considerably in different specific and may resemble the syndromic approach adopted in advanced medical centres in developed countries. However, the actions taken and critical decision points will differ considerably from the tropics so that the diagnostic and treatment pathways intended for well-resourced medical centres cannot be applied directly in a tropical, developing country setting (Christian et al., 2018).

Clinical features of Respiratory Tract Infection

The features of different respiratory tract infections largely depend on the structures where inflammation is localised and the extent to which function is altered. So, infection of the nasopharynx will result in a nasal discharge, bronchitis in cough and sputum production, and pneumonia in cough and sputum, but also in increased respiratory rate and chest radiograph changes (WHO, 2018).

Most upper respiratory tract infections are caused by viruses and are self-limiting. A specific aetiological diagnosis would not alter treatment and would be costly. The role of the physician is limited to reassuring the patient and recognising the more serious bacterial infections that require specific antimicrobial chemotherapy or more extensive supportive treatment. Lower respiratory tract infection should always be taken seriously since it is more likely to cause serious morbidity or even death. Laboratory tests History, physical examination, X-rays and laboratory investigations focus on two issues: the degree of respiratory compromise and the identity of the causal pathogen. Since a wide range of candidate pathogens may have to be considered, the number of likely candidates should be reduced as far as possible by searching for clues in the history, examination and preliminary results. A history of tobacco consumption, recent travel, occupation, pets, and contacts with similar symptoms should be sought (WHO, 2018).

Diagnostic specimens can be obtained from the respiratory tract with deceptive ease, but their value is often limited by contamination by the indigenous flora of the oral cavity. To prevent contamination of lower respiratory tract specimens, the upper respiratory tract must be bypassed. Chest X-rays are a fundamental part of evaluation of lower respiratory tract infections and provide evidence of the distribution and extent of disease more reliably than signs elicited by auscultation (Daley et al., 2018).

Postero-anterior views are most commonly used, but a lateral view can provide valuable additional information. Blood gas analysis should be performed if there is any suspicion of acute respiratory compromise. The key indicators of disease severity in pneumonia are raised respiratory rate (> 30 beats/min), hypoxia, hypercapnia, bilateral or recently enlarging radiographic opacities, shock, renal failure and confusion (Daley et al., 2018).

Management of Respiratory Tract Infection

The antimicrobial therapy of respiratory tract infection depends not only on the likely microbial cause of Infections of the respiratory tract infection but also on the primary site involved and the severity of disease. The commoner upper respiratory tract infections are rarely life threatening and in many cases are self-limiting. It is therefore possible to manage many of these infections without specific chemotherapy, thereby avoiding all the possible adverse effects (WHO, 2018).

However, even apparently trivial infections such as pharyngitis may require specific antibiotic treatment in some cases. The problem is in knowing who and when to treat with antimicrobial agents. Lower respiratory infections are less of a problem in this respect, since infection is much more likely to cause significant morbidity and mortality. Antibiotics should be used as early as possible in the course of infection. The problem here is in knowing which of a wide range to choose. It is often necessary to make a 'best guess' or presumptive choice in severely ill patients, based on the most likely microbial agent (Sarinas et al., 2018).

The initial choice of chemotherapy may have to be substantially modified in the light of laboratory results. Patients with pneumonia who are ill enough to require hospitalisation usually require parenteral antibiotics. A syndrome-based choice of therapy has become the preferred approach, since antibiotic choice and decisions on the need for hospital admission and active supportive care do not have to wait for a laboratory based aetiological diagnosis (Sarinas et al., 2018).

The ease with which respiratory infections can be spread and their associated morbidity has led to the development of specific preventive approaches. Influenza can be prevented by immunisation with a live

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attenuated vaccine (WHO, 2017). The changes in epidemic strains of influenza virus necessitate periodic changes in vaccine composition and revaccination of high-risk groups such as the elderly and patients with cardiac or renal failure. Pneumococcal infection can also be prevented by vaccination. Like influenza, changes in prevailing infective strains (capsular polysaccharide types) require alterations in the composition of the polyvalent vaccine (Sarinas et al., 2018).

Again, vaccination is restricted to high-risk groups. Infection with Mycobacterium tuberculosis can be prevented by vaccination with a live attenuated strain (BCG; bacillus Calmette–Guérin), although protection against pulmonary infection may be only partial in some populations. In hospitals, the spread of respiratory infection from known cases of influenza and pneumonia can be prevented by infection control procedures. These are referred to as 'additional precautions' and include nursing the patient in a separate side ward, away from other patients and nonimmune staff. Filter-type masks and aprons are also worn by staff and other visitors. At a personal level, covering the mouth when coughing or sneezing is a simple but effective means of preventing the spread of respiratory pathogens (Sarinas et al., 2018).

Diagnosis of Respiratory Tract Infection

When Epstein–Barr virus infection (infectious mononucleosis) is suspected, full blood count, blood film and Paul–Bunnell test for heterophile antibodies should be requested. This is not sensitive in Asians; in this group IgM to viral capsid antigen should be sought. The investigation most frequently requested for pharyngitis is detection of S. pyogenes. This species is detected either by culture on blood agar and subsequent latex agglutination reaction for group-specific polysaccharide, or by direct antigen detection (Carroll, 2018).

Neither method can distinguish oropharyngeal colonisation from true infection, but only culture allows antibiotic susceptibility testing. Suspicion of infection with N. gonorrhoea, Mycoplasma spp., Arcanobacterium sp. or Corynebacterium spp. should be communicated to the laboratory so that specialist, non-routine culture media can be used (Carroll, 2018).

Treatment of Respiratory Tract Infection

An oral penicillin or erythromycin is used to treat streptococcal pharyngitis. Treatment may not alter the course of the primary pharyngeal infection, but it should reduce the risk of major non-infective sequelae such as rheumatic heart disease, poststreptococcal glomerulonephritis and Sydenham's chorea (Carroll, 2018).

The need for antibiotic treatment of streptococcal pharyngitis has been questioned in developed countries, since the non-infective sequelae of streptococcal infection are all rare; but the recent increase in streptococcal infection in Europe and North America may change this view. The other complications of streptococcal pharyngitis include scarlet fever (less common than in the past in developed countries), streptococcal toxic shock syndrome (both caused by toxin) and quinsy (paratonsillar abscess) (Carroll, 2018).

In quinsy, there may be secondary infection with oral anaerobic bacteria, but these are often penicillin sensitive. The common cold is a frequent occurrence, especially in young children and their parents during the autumn–spring period. The condition is caused mainly by rhinoviruses. The size of the rhinoviral group, and the causal role of other respiratory viruses in a minority of common colds, has prevented the development of an effective vaccine. There is a nasal discharge, nasal obstruction and sneezing. Pharyngitis and cough may be present, but fever and myalgia are both rare features. There is no reason to use antimicrobial agents, and treatment should be restricted to alleviation of symptoms (Carroll, 2018).

Epidemic and endemic influenza occurs, caused by influenza virus groups A–C. Some of the features of a common cold may be present, but systemic and respiratory symptoms are more pronounced. Fever, lethargy and myalgia are all common. The influenza virus is an RNA virus with a segmented genome. Two major surface antigens are used in typing epidemic strains: haemagglutinin and neuraminidase. The different types of influenza virus noted in successive epidemics are the result of genetic re-assortment which causes an antigenic shift. Minor changes in antigenic makeup occur between epidemics. These are referred to as antigenic drift. Antigenic shift results in influenza epidemics because it renders (Mishra et al., 2018). Pre-existing specific immunity to influenza virus antigens obsolete. High mortality rates have been recorded during influenza epidemics as a result of cardio respiratory failure or secondary bacterial pneumonia (caused by Staphylococcus aureus or S. pneumoniae) (Mishra et al., 2018).

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Diagnosis is usually clinical, with serology reserved for epidemiological studies and pandemic surveillance. Treatment is aimed at symptomatic relief and at complications if they occur. However, amantidine treatment may be of benefit if commenced early during infection with epidemic type A strains (Mishra et al., 2018).

New treatments for influenza infection, such as the neuraminidase inhibitor oseltamivir, may reduce the duration of symptoms in a proportion of patients. A vaccine is available, but it is only effective against previously isolated strains. The vaccine is therefore offered to those at high risk of complications, i.e. the elderly, those with cardiac or respiratory disease, those with renal failure, the inhabitants of residential institutions and those in high-risk occupations (e.g. health care) (Mishra et al., 2018). Otitis media is an acute inflammation of the middle ear. It is most frequent in the younger child, whose eustachian tube is shorter and more horizontal. It is also more prone to blockage by hypertrophic lymphoid tissue at the proximal end, as a result of prior respiratory tract infection. Purulent fluid accumulates behind a tense, red tympanic membrane and may discharge externally after rupture of the membrane. Infection is most often caused by S. pneumoniae or H. influenzae. Fever and local pain are common features (Mishra et al., 2018).

Common complications include secretory otitis media and impaired hearing. Much rarer complications are meningitis and mastoiditis. Diagnosis is mainly clinical. Auroscopic examination of both tympanic membranes should be performed. Aetiological diagnosis is possible only if purulent exudate from the middle ear is cultured, either following discharge via the eardrum or following tympanocentesis (Mishra et al., 2018).

Treatment Antimicrobial treatment is with an antibacterial agent (e.g. oral ampicillin or erythromycin for 7–10 days). Some authorities recommend decongestant therapy as an alternative in uncomplicated acute otitis media (Mishra et al., 2018).

Theoretical Framework

American Association of Critical Care Nurse's Model

The conceptual framework of the American Association of Critical Care Nurse's (AACN) synergy model (SM) for patient care will guide a review of the evidence by identifying competency strengths and areas for professional development to optimize patient outcomes (Debourgh, 2012). There is a growing body of evidence indicating that successful application of the model to current practice is cultivated by gaining an understanding of three components: the relationship between patient needs or characteristics, patient perception of the importance of nurse competencies, and environmental factors that affect synergy (MacPhee, Wardrop, Campbell, Wejr, 2011).

Synergy is accomplished when the needs and characteristics of a patient or health care environment corresponds with a nurse's competencies pertaining to the nutritional demands for wound healing (Kaplow, 2018). The basic premise of the synergy model (SM) provides a unifying framework for the development and implementation of an innovative approach to professional nursing and patient care (Gralton & Brett, 2012). It is a mechanism for evaluating the needs of patients and families as well as the level of care they require. The model objectively quantifies eight patient characteristics: resiliency, vulnerability, stability, complexity, resource availability, participation in care, participation in decision making, and predictability (Kaplow, 2018) and eight nurse competencies that influence patient outcomes. The Continuous Professional Development (CPD) model consists of six steps: identify a problem; perform a needs assessment to identify the problem; set goals and objectives according to the needs; select educational strategies; implement; evaluate; and obtain feedback on the program. According to this model, performance gaps result due to lack of knowledge. Thus, the focus of CPD is to maintain, develop, and enhance skills, knowledge, and performance of healthcare professionals to improve patient outcomes and systems of care (Sargeant et al., 2017). The Kirkpatrick model of evaluation was used as a tool to evaluate the effectiveness of the teaching plan, which suggests four levels of evaluating an educational course: Reaction, Learning, Behavior, and Results (Lawler, 2017).

The effectiveness of the educational course will be measured qualitatively through participant and supervisor surveys as well as post test scores to determine the participant's reaction to the training session, obtain direct feedback, and assess the knowledge gained from the education. The impact on reducing hospital length of stay will be measured within the next few months as it requires data that must be collected after a longer period of time to better assess the impact of the education provided on patient outcomes.

Empirical Studies

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Cawright (2020) examined the effect of respiratory tract infection among under-five children. The study employed the use of survey research design to source information for the conduct of the study. The result of the study showed that, respiratory tract infection has negative effect on under-five children.

Horn, King and Dillon (2017) assessed the implications of respiratory tract infection on maternal mortality. Data were sourced from a primary source using a cross-sectional survey method. A sample of 763 respondents was used. Data collected were analyzed using simple percentage and linear regression analysis. The result shows that, respiratory tract infection has increased maternal mortality.

Marx, Wright, Michael and Kingsley (2016) studied the impact of respiratory infections among women of reproductive age. A sample of 329 respondents was used to collect data. Data were analyzed using logistic regression analysis. The result shows the odds ratio of respiratory infection to have negatively affected women of reproductive age.

Adeleye (2020) assessed the effectiveness of health professionals in treatment of respiratory tract infection among patients. The study used experimental design. The study showed that health professionals have little knowledge on the causes of respiratory tract infection. Their attitude towards treatment of the infection is negatively affected by the compliance of the patients with the treatment guide lines and ability to adhere to it.

Methodology

Research Design

Research design for this study was a survey research design. This study made use of a structured questionnaire to be constructed by the researcher to source data for the conduct of the study. Survey design is a quantitative research method used for collecting data from a set of panel or respondents (Claybaugh, 2020). The choice of the survey is based on its suitability for collection of first hand data as respondents were given the opportunity o respond to the questionnaire items as best expressed their feelings.

Study Area

This study was carried out in Jalingo Local Government Area of Taraba State. Jalingo LGA is roughly located between latitudes 8°47' to 9°01'N and longitudes 11°09' to 11°30'E. It is bounded to the North by Lau LGA, to the East by Yorro LGA, to the south and West by Ardo Kola LGA. It has a total land area of about 195.071 km^2. The major health settings in Jalingo Local Government Area include: Federal Medical Centre and Taraba State Specialist Hospital. The major ethnic groups in Jalingo LGA are the Mumuye, Jukun, Jenjo, Fulani and Wurkum. Other ethnic groups include Kona, Chamba, Kuteb, Kunini, Bambuka, Nyandang to mention but a few. Vegetationally, Jalingo is located within the Northern Guinea Savanna Zone characterized by grasses interspersed with tall trees and shrubs (Oruonye & Abbas, 2010). The major occupation of the inhabitants is farming.

Population of the Study

The target population of the study is made up of over one hundred and eighty four thousand, two hundred and seventy three (184,273) women aged between 15 - 49 years of child bearing age in Jalingo Local Government Area, Taraba State-Nigeria (NPC, Population projection, 2020).

Sample Size and Sampling Techniques

This study covered women of reproductive age in Jalingo Local Government Area, Taraba State. A sample size of four hundred (400) respondents was drawn from the entire population of the study using simple random sampling technique. An equal chance was given to any selected respondent picked at random using purposive sampling technique. The choice was based on its simplicity and suitability to yield better results. The sample size of this study is determined using Taro Yamane sample determination technique which is given as follows:

$$n = \frac{N}{1 + Ne^2}$$

Where,

n = sample size

N = Population of the study

e = Error limit

1 = Constant

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$$n = \frac{184{,}273}{1+ 184{,}273 \, (0.05)^2}$$

$$n = \frac{184{,}273}{1+ 460.6825}$$

$$n = \frac{184{,}273}{461}$$

$$n = 400$$

Study Instrument

Primary data were collected and used for the purpose of this study. Primary data were collected through the use of structured questionnaires administered to the respondents in the study area. The questionnaire were set in line with specific research objectives of the study which was divided into two parts namely: Sections (A) comprised the demographic data of the respondents and Section (B) comprised questions seeking for the opinions of the respondents with respect to the specific research questions were answered by circling or ticking the option that best expressed the feeling of the respondents to the specific research questions.

Validity and Reliability of Instrument

A measuring instrument is considered valid only when it measures truly and accurately what it intends to measure. The instrument constructed by the researcher was validated by project supervisor and two other experts in the field of Health Sciences which led to the final draft of the instrument.

The reliability coefficient of the instrument was determined using Alpha Cronbach's reliability test criteria which revealed the reliability coefficient of 0.90. Hence, this result showed that the instrument was considered reliable, because the closer the result to positive one (1) the more reliable the instrument becomes. The reliability result is presented in table 1 below.

Table 1 Reliability Test Result

Alpha Cronbach's reliability	No. of items
.90	30

Source: Author's Computation

Method of Data Collection

The researcher used a self-constructed questionnaire to collect data from the sampled respondents in the study area for the conduct of this study. The questionnaire was aimed at sourcing firsthand information regarding the topic under study. the constructed instrument was administered to the sampled respondents, filled and returned to the researcher where sorting, coding and analysis was carried out under method of data analysis presented in chapter four.

Method of Data Analysis

Data collected through questionnaires on socioeconomic characteristics of the respondents were statistically presented and analyzed using frequency table and simple percentage, but data collected in response to the specific research questions were analyzed using mean and standard deviation with help of SPSS version 23.

Results

This chapter dealt with data presentation, analysis, interpretation and discussion of the findings. In this study, descriptive statistics were used to sort, code, present and analyzed data collected for the conduct of the study. Demographic data were presented in tabular form and graphical format while responses from the questionnaire were analyzed using mean and standard deviation. Four hundred questionnaires were distributed, but only 365 were duly filled and returned.

Table 2: Socio-economic Characteristics of the respondents

Age	Frequency	Percentage (%)
18 – 24	110	30.0
25 – 29	164	45.0
30 – 39	73	20.0

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40 & above	18	5.0
Total	365	100.0
Sex		
Female	127	34.8
Male	238	65.2
Total	365	100.0
Qualification		
No formal education	6	1.7
Primary	30	8.3
Secondary	220	60.2
Tertiary	109	29.8
Total	365	100.0
Marital Status		
Single	222	60.8
Married	125	34.3
Widow	12	3.2
Divorced	6	1.7
Total	365	100.0
Occupation		
Student	32	8.7
Applicant	45	12.3
Civil Servant	66	18.2
Farming	149	40.8
Business	73	20.0
Total	365	100.0

Table 3: Mean and Standard deviation of the causes of respiratory tract infections

S/N	Variable	N	Mean	Std	Decision
1	Virus with flu	365	3.8695	.42551	Accepted
2	Bacteria	365	3.7884	.64643	Accepted
3	Fungal infections and staphylococcus aureus	365	3.7867	.44448	Accepted
4	Mycoplasma and streptococcus	365	3.6511	.50716	Accepted
5	Dust and Chemicals	365	3.8153	.40733	Accepted
6	Congestion and Allergens	365	3.7526	.33308	Accepted
7	Respiratory Syncytial virus	365	3.8553	.63077	Accepted
8	Air pollution from traffic and industrial sources	365	3.6234	.54470	Accepted
9	Indoor air burning from burning fuels	365	3.8184	.24359	Accepted
10	Tobacco smoke	365	3.8434	.60284	Accepted

Table 4: Mean and Standard deviation of the effects of respiratory tract infections

S/N	Variable	N	Mean	Std	Decision
1	Coughing	365	3.6136	.48757	Accepted
2	Respiratory failure	365	3.8531	1.03052	Accepted
3	Sore throat	365	3.6319	.46231	Accepted
4	Congestive heart failure	365	3.8852	1.06500	Accepted
5	Abnormal lung functioning	365	3.8361	.49749	Accepted
6	Blood infection (sepsis) leading to organ shutdown	365	3.8068	.46231	Accepted

7	Respiratory arrest	365	3.8178	.50016	Accepted
8	Runny nose	365	3.7924	.45547	Accepted
9	Severe fever	365	3.4770	.49468	Accepted
10	Death occurs as a result of negligent to proper treatment	365	3.8436	.64537	Accepted

Table 5: Mean and Standard deviation of measures of controlling respiratory tract infections

S/N	Variable	N	Mean	Std	Decision
1	Getting vaccines such as Pneumococcus and MMR	365	3.8495	.49043	Accepted
2	Use of pertussis to lower the risk of getting the infection	365	3.6710	.47046	Accepted
3	Influenza vaccination	365	3.8280	.58210	Accepted
4	Avoid touching face, eye and mouth with unwashed hands	365	3.8736	.65742	Accepted
5	Avoidance of tobacco smoking	365	3.8729	.57173	Accepted
6	Cleaning and disinfecting surfaces regularly	365	3.8140	.82598	Accepted
7	Avoidance of known irritants such as chemicals and fumes	365	3.7640	.49654	Accepted
8	Practice good hygiene and proper environmental sanitation	365	3.6346	.49654	Accepted
9	Avoid overcrowded places	365	3.4532	.05298	Accepted
10	Consume adequate vitamins especially vitamin A	365	3.2619	.66703	Accepted

Discussion

Table 2 shows the socioeconomic characteristics of the respondents; it shows that 30% are between the ages of 18 – 24 years, 45% are between the ages of 25 – 29 years, 20% are between the ages of 30 – 39 years and 5.0% are between the ages of 40 years and above respectively. It therefore shows that majority of the respondents are between the ages of 25 – 29 years old. Table 2 also reveals that 34.8% of the entire respondents are female while 65.2% are male. Hence, indicates that most of the respondents are male who responded to the research instrument. Furthering, table 2 also shows that 1.7% of the respondents have no formal education; 8.3% have primary school certificate (FSLC); 60.2% of the same respondents have Secondary school certificate (SSCE) and 29.8% of the respondents have Tertiary educational qualification. Hence, most of the respondents have SSCE who constitutes the majority of the respondents.

More so, Table 2 further reveals that 60.8% of the entire respondents are single; 34.3% are married; 3.2% are widows/widowers and 1.7% are divorced. Thus, majority of the respondents are single. In addition, Table 2 showed that 8.7% of the respondents are students; 12.3% are applicants; 18.2% are civil servants; 40.8% are farmers and 20% are business men and women respectively. By implication, the major occupation of the sampled respondents is farming.

Table 3 revealed that virus with flu, tobacco smoke, respiratory syncytial virus, indoor air burning from burning fuels, dust and chemicals, bacteria as well as fungal infections and staphylococcus aureus were accepted to be the main causes of respiratory tract infections Jalingo Local Government Area with the mean scores of 3.8695, 3.8553, 3.8434, 3.8184, 3.8153, 3.7884 and 3.7867 respectively. Other causes accepted include: Congestion and Allergens, Mycoplasma and streptococcus and air pollution from traffic and industrial sources.

Table 4 indicated that, congestive heart failure, respiratory failure, death occurs as a result of negligent to proper treatment, abnormal lung functioning, respiratory arrest and blood infection (sepsis) leading to organ shutdown were identified in this study as the major effects of effects of respiratory tract infections among patients in Jalingo Local Government Area of Taraba State. These were supported with the mean scores of

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3.8852, 3.8531, 3.8436, 3.8361, 3.8178 and 3.8068. Other consequences identified include: runny nose, sore throat, coughing and severe fever respectively.

Table 5 presented that, avoid touching face, eye and mouth with unwashed hands, avoidance of tobacco smoking, getting vaccines such as pneumococcus and MMR, influenza vaccination, cleaning and disinfecting surfaces regularly and avoidance of known irritants such as chemicals and fumes were identified as the suitable measures of controlling respiratory tract infections among patients in Jalingo Local Government Area of Taraba State. Others include: avoidance of known irritants such as chemicals and fumes, use of pertussis to lower the risk of getting the infection, practice good hygiene and proper environmental sanitation, avoid overcrowded places and consumption of adequate vitamins especially vitamin A respectively.

Conclusion

This study examined the causes, effects and control of respiratory tract infections among patients in Jalingo Local Government Area of Taraba State. The study found that, virus with flu, tobacco smoke, respiratory syncytial virus, indoor air burning from burning fuels, dust and chemicals, bacteria as well as fungal infections and staphylococcus aureus were accepted to be the main causes of respiratory tract infections. While congestive heart failure, respiratory failure, death occurs as a result of negligent to proper treatment, abnormal lung functioning, respiratory arrest and blood infection (sepsis) leading to organ shutdown were identified in this study as the major effects of effects of respiratory tract infections among patients in Jalingo Local Government Area of Taraba State. The study further found that, avoid touching face, eye and mouth with unwashed hands, avoidance of tobacco smoking, getting vaccines such as pneumococcus and MMR, influenza vaccination, cleaning and disinfecting surfaces regularly and avoidance of known irritants such as chemicals and fumes were identified as the suitable measures of controlling respiratory tract infections among patients in Jalingo Local Government Area of Taraba State.

Recommendations

Based on the results of the study, the researcher made the following recommendations for policy initiation and implementation in the health settings in the study area and the state at large:

i Health professionals and health management should provide adequate vital information to the general public to enlighten them on the preventive measure of respiratory tract infection so as to reduce the menace of the infections to its minimal point as well as promote good health among the populace in the study location and the state as a whole.

ii Government and health policy formulators should as a matter of urgency provide substantial and effective measures through programmes and schemes as well as provide adequate vaccines for treatment and management of respiratory tract infections.

iii Guided prescription of antimicrobial therapy should be implemented to limit the fast spread of antimicrobial resistance.

iv Public awareness should also be raised to prohibit the widespread antibiotics misuse and to highlight the importance of hygienic practices.

v Use of antibiotic cycling policy, as rotation of antibiotic classes, reduces the emergence of resistant organisms.

vi Generally, proper sanitation and food hygiene should be adequately maintained by the households, offices, agencies, Ministries, health settings in order to help reduce the incidence of the respiratory infections.

References

1. Adegbola, R.D., Ramana KV., Kalaskar, M.R & Sanjeev, D .R (2020). Etiology and antimicrobial susceptibility patterns of lower respiratory tract infections (LRTI's) in a rural tertiary care teaching hospital at karimnagar, south india. *Am J Inf Dis & Microb* 2020; 1(5): 101-5.
2. Adeleye, O.K (2020) Viruses and Gram-negative bacilli dominate the etiology of community-acquired pneumonia in Indonesia, a cohort study. *Int J Infect Dis 2015*; 38: 101-7.

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3. Carroll KC (2018). Laboratory diagnosis of lower respiratory tract infections: controversy and conundrums J Clin Microbiol 2018; 40(9): 3115-20.

4. Cawright, H.O. (2020). Improving sputum culture results for diagnosis of lower respiratory tract by saline washing. *Marmara Med J* 2020; 23(1): 30-6.

5. Christian MD, Poutanen SM, Loutfy MR, Muller MP, Low DE (2018). Severe acute respiratory syndrome. *Clin Infect Dis*. 2018; 38:1420-1427.

6. Daley CL. (2018). *Tropical respiratory medicine*. 1. Pulmonary infections in the tropics: impact of HIV infection. Thorax 2018; 49: 370-378.

7. Debourgh, H. (2012). Sensitivity pattern of bacteria causing respiratory tract infections in a tertiary care centre. *Int J Basic Clin Pharmacol* 2012; 2(5): 590-5.

8. Gralton, E., & Brett, R. (2012). Antibiotic susceptibility of pathogens isolated from patients with community acquired respiratory tract infections in Pakistan- the active study. *J Ayub Med Coll Abbottabad* 2012; 20(1): 7-9.

9. Horn, CA,. King, C,. & Dillon, R (2017). Microbiology of lower respiratory tract infections in Benin City, Nigeria. *Malays. J. Med. Sci*. 2017; 18(2): 27-31.

10. John, K. (2018). Clinical influences on antibiotic prescribing decisions for lower respiratory tract infection: A nine country qualitative study of variation in care. *BMJ Open* 2018; 2(3): e000795.

11. Kaplow, S (2018). Prevalence and antibiotic sensitivity of bacterial agents involved in lower respiratory tract infections. *Int J. Biol. Chem. Sci.* 2018; 5(2): 774-81.

12. Lawler, S. (2017). Antimicrobial resistance pattern of some bacterial pathogens involved in lower respiratory tract infections in Egypt *ACTA MICROBIOLOGICA* ISSN 2386-7469 2018; 1(1): 22-6.

13. MacParlance J, Holmes W, Gard P, (2011). *Prospective study of the incidence, aetiology and outcome of adult lower respiratory tract illness in the community*. Thorax 2011; 56(2): 109-14.

14. Marx, T., Wright, J., Michael, Y., & Kingsley, O.P (2016). Lower respiratory tract infections: Current etiological trends and antibiogram. *Journal of Pharm Biomed Sci* 2016; 04(03): 249-55.

15. Mishra SK, Kathel HP, Acharya J, Shah NP, Shah AS, Sherchand JB. (2018). Recent trends of bacterial aetiology of LRTI in Nepal. *Int J Infect Microbial* 2018; 1(1): 3-8.

16. Sargeant, Y., Gjelstad S, Dalen I, Lindbaek M. GPs' (2017). Antibiotic prescription patterns for respiratory tract infections--still room for improvement. Scand J Prim Health Care 2009; 27(4): 208-15.

17. Sarinas PS, Chitkara, RK. Ascariasis, D., & Hookworm, R. (2018). *Respiratory tract Infections*. Pulmonary manifestations of HIV/AIDS in the tropics. Clin Chest Med 2018; 23: 355-367.

18. WHO, (2017). *Global Tuberculosis Control Surveillance, Planning, Financing*, Geneva, Switzerland, 2017. WHO/HTM/TB/ 2017.376.

19. World Health Organization (2018). *Global respiratory tract infection Report* WHO/HTM/TB/20126. Geneva: WHO 2018.

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