

Knowledge and Practice of Sneeze and Cough Etiquettes among Participants in A Randomized Study in Ekiti-State, South-Western Nigeria

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ABSTRACT

Background: Indiscriminate sneezing and coughing with infectious runny nose pose threats to public health. In this study, we investigate knowledge and practice of sneeze and cough etiquettes among residents in Ekiti-State, South-Western Nigeria.

Objective: To sensitize the public on the roles of sneeze and cough etiquettes in the prevention the spread of infectious respiratory diseases.

Methodology: A prospective, cross-sectional, randomized study of respondents in Ekiti State was conducted.

Results: In all, 395 participants were studied. Of this number, 228 (57.7%) sneeze or cough into air without a cover on their nose or mouth, 82 (20.7%) into handkerchiefs, 20 (5.1%) into tissue, 22 (5.6%) into bare hand, 5 (1.3%) into sleeve or crook of elbow and 38 (9.6%) use a combination of methods. The proportion of respondents that wash hands or handkerchief soon after clean-up of the runny nose was only 38%. There was an inverse relationship between education attainment and hospital care of runny nose.

Conclusion: This study shows that the majority (57.7%) of the respondents sneeze or cough into air without a cover on the nose or mouth. Only 1.3% of the respondents sneezes or coughs into sleeve or crook of the elbow which is the most acceptable form of hygiene etiquette. The proportion of respondents that wash hands or handkerchief soon after a clean-up of runny nose was quite small. Education has no comparative advantage over illiteracy in the uptake of treatment of runny nose. We, therefore, recommend that the public must be educated on the best sneeze, cough and respiratory hygiene etiquettes irrespective of their educational attainment.

Keywords: Runny nose; Sneezing; Coughing; Etiquette manoeuvres

INTRODUCTION

Sneezing, coughing and runny nose are three interrelated symptoms of public health importance. The triad can be the harbinger of severe respiratory diseases. As noted by expert, the dangerous material in the spread of respiratory infections is

nasal secretions [1]. Serious respiratory illnesses like influenza, respiratory Syncytial Virus (RSV), whooping cough, and Severe Acute Respiratory Syndrome (SARS) are spread by coughing or sneezing [2]. Diseases such as common cold [3], influenza [4], allergic rhinitis [5], vasomotor rhinitis [6] and pregnancy-induced rhinitis [7] can all manifest with nasal secretions. These

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Received date: August 14, 2019; **Accepted date:** September 03, 2019; **Published date:** September 10, 2019

Citation: Olajuyin OA, Olajide TG, Ogunboyo F, Olajuyin AB, Olajuyin AA, Deji SA (2019) Knowledge and Practice of Sneeze and Cough Etiquettes among Participants in a Randomized Study in Ekiti-State, South-Western Nigeria. J Trop Dis. 7:335. doi: 10.35248/2329-891X.19.7.335

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respiratory diseases are world-wide without racial, gender, age or socio-cultural borders. Millions of Britons catch a cold or flu each year [8] while 305 cases of allergic rhinitis were reported in Ekiti State, South-Western Nigeria over a period of 2 years [9]. Depending on the aetiology and severity, respiratory diseases may be associated with life-threatening complications. In the United State of America, more than 200,000 persons on the average are hospitalized each year for influenza-related complications [10]. Characteristically, sneezing, coughing and runny nose spread respiratory diseases through aerosol or direct personal contact with infected items such as doorknobs, money, computer keyboards, telephones, toys or other people's hands [1]. According to John Oxford, about half of all common cold viruses are transmitted via the hands, with the rest caught by breathing in infected droplets that others have sneezed out. A single sneeze produces more than 40,000 droplets of moisture and millions of germs, propelled over a distance of 32ft [8]. The propelled germs may be viral, bacterial or fungi agents. The thousands of viruses subtly change all the time, meaning that people's immune systems cannot develop antibodies against all of them [8]. Furthermore, the mutating capacity of the viral pathogens often renders vaccinations ineffective or delay their use until clear identification of the genetic makeup has been made, allowing precious time for the microorganism to spread [11]. Thus, a way out of this infection quagmire is to control the sneeze, cough and runny that spread the respiratory diseases. Over the years, there have been efforts at curtailing sneezing or coughing in the public. In Omaha, Nebraska for instance, it is illegal to sneeze during a church service [12]. Although this might be for social reason (to avoid distraction), this law has some health implications. In the scientific domain, however, the recommended ways to block the spread of air-borne infections are; covering the mouth and nose during coughing and sneezing using handkerchief or tissues with prompt disposal into a no-touch receptacle, offering a surgical mask to persons who are coughing to decrease contamination of the surrounding environment, turning the head away from others and maintaining spatial separation, ideally more than 3 feet, when coughing, hand wash after clean-up of runny nose, early self-isolation and personal protective (non-pharmaceutical) strategies. Other measures include sneezing or coughing into arm, sleeve or crook of elbow [8]. Although, there is no general consensus among the global health agencies regarding the best sneeze, cough, and respiratory hygiene practice, it appears that: "Cover your mouth and nose with a tissue when you cough or sneeze, dispose the used tissue in a garbage can, if you don't have a tissue, cough or sneeze into your elbow or sleeve, not in your hands", is the most acceptable recommendation [11]. All in all, the objectives of the sneeze or cough etiquette are to minimize the spread of aerosol droplets and avoid contamination of public items. As part of measures to achieve these objectives, stakeholders have continued to research into and promote safe sneeze and cough etiquette manoeuvres in society. In this study, we investigate the knowledge and practice of sneeze and cough etiquettes with a view to document our own experience and sensitize the public on their roles in the prevention of infectious respiratory diseases.

METHODOLOGY

Study setting

The participants were randomly selected and interviewed at three different zones within Ekiti State. Ekiti state is located between longitudes 4° 45' and 5° 45' East of the Greenwich meridian and latitudes 7° 15' and 8° 15' North of the equator in Southwest Nigeria. It is divided into three senatorial districts with 16 local government Areas and a population of 2,384,212 as recorded in the 2006 census [13]. It has two weather conditions-raining and dry seasons and the main occupation is agriculture.

Study design and data collection

This was a community-based, cross-sectional, prospective study of respondents that significantly sneeze or cough with or without a runny nose in the preceding six months. The data were acquired using structured, pretested, questionnaires. The information inquired were the socio-demographic variables, Past or present history of sneezing, coughing and runny nose, frequency of the runny nose, history of allergy, method of controlling sneeze, cough or nasal secretions, complications and treatment received. The majority of the aetiological factors must be factored-in were diagnosed on clinical grounds and those found to require further evaluation were reviewed in our clinics and radiological investigations were carried out to establish a definitive clinical diagnosis. This was done by detailed history-taking, thorough physical examination, skin prick test, microscopy, culture/sensitivity test of nasal secretions and plain radiograph of the paranasal sinuses using occipitofrontal, occipitofrontal and lateral views. In order to ensure that participants without knowledge of English language understand the questionnaires, such participants were interviewed by our team members who understand the language of the respondents.

Exclusion criteria

Excluded were those without sneeze, cough or runny nose within the study period. Also excluded were respondents with nasal polyps, foreign body, and systemic diseases.

Ethical consideration

Approval for the study was obtained from the Ethics and Research Committee of the Ekiti State University Teaching Hospital Ado Ekiti. The participants were informed about the study and its purpose in clear terms. The consent of each participant was sought through an information/consent note attached to the questionnaire. Participation was voluntary and only those who consented to participate were recruited. The decision of the participants to participate or not did not influence the care given to those that require further evaluation and treatment in our centers.

Data analysis

The data generated were entered into a personal computer and simple descriptive statistics was performed using SPSS Version 20.

RESULTS

In all, 395 participants aged between 12 years and 62years (mean=22 ± 7.10 years) consented to participate and were studied. The socio-demographic variables are presented in Table 1.

Table 1: Demographic variables of the respondents.

| Variable | Frequency (n) | Percentage (%) |
|---------------------|---------------|----------------|
| Sex | | |
| Male | 165 | 41.8 |
| Female | 230 | 58.2 |
| Occupation | | |
| Student | 277 | 73.3 |
| Civil servant | 27 | 7.1 |
| Others | 74 | 19.6 |
| Academic level | | |
| No formal education | 2 | 0.5 |
| Primary education | 10 | 2.7 |
| Secondary education | 36 | 9.7 |
| Tertiary education | 305 | 81.8 |
| Unclassified | 20 | 5.4 |
| Place of resident | | |
| Rural area | 95 | 25.5 |
| Semi-rural | 88 | 23.6 |
| Urban area | 190 | 50.9 |
| Marital status | | |
| Single | 287 | 76.1 |
| Married | 50 | 13.3 |
| Widowed | 2 | 0.5 |

| | | |
|-------------------|----|------|
| In a relationship | 38 | 10.1 |
|-------------------|----|------|

The most common aetiological factor of the sneeze, cough and or runny nose is allergic rhinitis accounting for 58.7% of the cases (Figure 1).

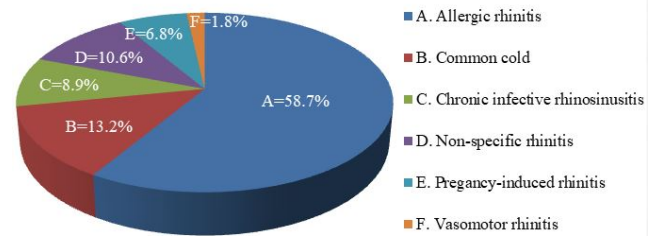


Figure 1: Aetiological factors of sneezing, coughing and or runny nose in the participants.

Of the 395 participants, 228 (57.7%) sneeze or cough into air without a cover on their nose or mouth, 82 (20.7%) into handkerchiefs, 20 (5.1%) into tissue, 22 (5.6%) into bare hand, 5 (1.3%) into sleeve or crook of elbow and 38 (9.6%) use a combination of methods. The main reason for the preference of handkerchief by the respondents was its re-usability. The proportion of respondents that wash hands or handkerchief soon after a clean-up of the runny nose was 38%. There was an inverse relationship between education attainment and hospital care of runny nose (Figure 2).

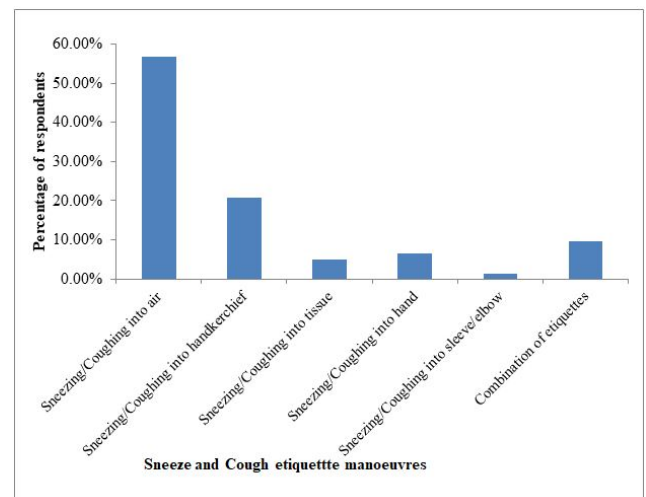


Figure 2: Percentage distribution of respondents according to the sneeze and cough. etiquette manoeuvres.

DISCUSSION

Sneezing, coughing and runny nose are symptomatic manifestations of infectious or non-infectious respiratory diseases. In this cross-sectional study, allergic rhinitis was found to be the most common aetiological factor accounting for 58.7% of the cases. The previous study had shown that allergic rhinitis is a prevalent condition, sneezing, and runny nose being the predominant symptoms [9]. Also, the study has shown that allergic rhinitis, a non-infectious disorder, can precipitate

infections in the respiratory passages. According to Sacre, there are other clinical presentations of allergic rhinitis such as recurrent infections of the upper respiratory tract [14]. Thus, indiscriminate sneezing or coughing with allergic runny nose may pose threats to public health. As noted by researchers, a single sneeze produces more than 40,000 droplets of moisture and millions of germs, propelled over a distance of 32 ft [8]. It is therefore important to understand the aetiological factors of sneeze, cough and or running nose with a view to offering appropriate treatment.

In this study, 57.7% of the respondents were observed to sneeze or cough into the air without a cover on the mouth or nose. This concurs with the report that; few people cover their nose or mouth when they cough or sneeze [15]. The reason for this behavioral pattern could be that sneezing or coughing is an involuntary action that occurs spontaneously sometimes without premonition. Furthermore, sneezing or coughing into the air incurs no extra cost in terms of materials or efforts at using hand to cover the nose or mouth. Also, sneezing into the air is believed by people in the study locale to rid the body of harmful substances. Indeed, the snorting of tobacco snuff by the people is partly to induce sneezing and get rid of 'sicknesses'. Affirming this observation in the report that: In the 17th and 18th centuries, patients were encouraged to snuff, snort and sneeze their way out of a whole range of ailments and diseases [16]. Thus, culprits snort not only to indulge in its psychoactive effects but also to induce sneezing and 'eliminate' toxic substances from the body. However, it is curious to see people snorting and sneezing when in their own opinion, harmful substances are released into the environment. Overall, indiscriminate sneezing or coughing could be due to lack of knowledge of the recommended sneeze or cough etiquette manoeuvres that are environmentally safe. Thus, there is the need for public enlightenment campaign on the acceptable sneeze and cough etiquettes manoeuvres so as to safeguard the health of the people.

The use of handkerchief to contain sneeze, cough or runny nose is an age-long phenomenon. The handkerchief is handy and fanciful. It is part of dressing code among men in suit and comes in different attractive colors and sizes. In the present study, the use of handkerchief was noted in 20.8% of the respondents. The main reason for choosing handkerchief by the respondents was its re-usability. However, observers had noted that the use of handkerchief is not without its inherent challenges. As observed, people may reuse wet areas of handkerchief, touch the wet parts with their hands, and then toss it into their pocket or bag where the germs can easily spread to other items [17]. Thus, experts have argued that handkerchief can only be of value in containing germs if both hand and handkerchief are washed immediately after use. Alternatively, two or more handkerchief may be carried along and each used folded to prevent direct contact with the used area of the handkerchief.

The use of tissue was observed in 5.1% of our respondents. This was quite low compared with the number of handkerchief users. As observed, the prevalence of handkerchief users was 20.8% given a ratio of 4:1 of handkerchief and tissue users. The reason

for the lower rate of tissue users was its disposability which to the poor is economically daunting. Researchers had recommended that people should sneeze or cough into a tissue, drop the tissue into a garbage can and wash their hands immediately [8]. However, sneezing or coughing into a tissue is one thing, getting rid of tissues immediately after use is another. As remarked by hanky-book, getting rid of tissues immediately after use is a nice thought but how often does that actually happen? People are busy and trash cans are not always available [17]. Thus, "When it comes to how to deal with germs, the most important thing is not about hanky or tissues but about using good, hygienic habits to minimize the spread of germs" so concluded hanky-book [17]. In the course of public enlightenment campaign, therefore, the economic and other logistic factors must be factored-in when recommending the appropriate sneeze or cough etiquette manoeuvres in the community.

Sneezing or coughing into the sleeve or crook of the elbow [6] is a technique that is receiving worldwide attention. The technique is cheap, easy to learn and simple to perform. It consists of holding up the sleeve or crook of the elbow to receive sneeze or cough from the nose or mouth. The technique has reached a phenomenal, close to universal acceptance, including elementary school children who are being successfully trained to practice it [11]. However, only 1.8% of respondents in this study were found to adopt it for the control of aerosol droplets. Proponents of the manoeuvre claim sneezing or coughing into the sleeve or crook of elbow serve two purposes. Firstly, it prevents hand contamination. Secondly, it leads to desiccation of the pathogens in the hostile environment of the sleeve or elbow. Although recent study has shown that this manoeuvre cannot in itself completely block the escape of aerosol droplets into the environment [11], the technique has a comparative advantage over other techniques. Thus, until a new technique that is cheap, simple and effective at preventing hand contamination and blocking the most minuscule aerosol droplets is found, this manoeuvre needs to be learned and widely propagated in the community so as to join forces with the global communities in the fight against the spread of infectious respiratory diseases.

Although the global health authorities had discouraged the use of hands to cover a cough or sneeze, many people still use this technique in many countries [11]. In the present study, 22 (5.6%) of the respondents cover their cough or sneeze with bare hands. Apart from hand contamination, such manoeuvre would not provide a tight seal on the nose and mouth as doing so would prevent respiration albeit transiently. Furthermore a tight seal on the nose and mouth while sneezing or coughing may force in a retrograde fashion, infectious blasts into the middle ears through the eustachian tubes. This may result in otitis media. Thus, in whatever way it is viewed, the technique is of no merit and must be condemned in its entirety.

Routine hand or handkerchief washing after a clean-up of the runny nose was recorded in 38% of the respondents in this study. Although no study has previously documented the handwashing statistics in the study locale, the prevalence may not be all this low in times of Ebola or Lassa fever epidemics

when public enlightenment campaign on handwashing was at its peak. Thus, it appears that people have now relented in their efforts at hand washing. This downward trend of basic hygiene procedure is curiously a worldwide phenomenon. According to John Oxford, basic hygiene measures have been forgotten in the fight against everyday infections with sufferers increasingly looking to science to cure their ills⁸. Therefore, to sustain any health care intervention, there is a need for routine evaluation and follow up of the health-promoting campaign in the community.

Treating the runny nose could reduce the reservoir of infectious respiratory diseases. However, the urge to seek health care may be influenced by certain socio-economic variables. Univariate analysis of parameters in this study, for instance, shows an inverse relationship between education and health-seeking behaviors of respondents. As noted, the number of respondents that sought hospital care for the runny nose was inversely proportional to their educational attainment. Of the 256 respondents who sought hospital care, 31.6% were well educated while 68.4% were at the lower rung of the academic ladder. This difference was statistically significant ($p < 0.05$) but could not be ascertained if the difference was real or occurrence perchance. Nevertheless, there is the need to subject both the learned and laypeople to the same scope of health education on the importance of treating runny nose.

CONCLUSION

This study shows that the majority (57.7%) of the respondents sneeze or cough into air without a cover on the nose or mouth. Only 1.3% of the respondents sneezes or coughs into sleeve or crook of the elbow which is the most acceptable form of hygiene etiquette. The proportion of respondents that wash hands or handkerchief soon after a clean-up of the runny nose was quite small. Education has no comparative advantage over illiteracy in the uptake of treatment of runny nose. We, therefore, recommend that the public must be educated on the best sneeze, cough and respiratory hygiene etiquettes irrespective of their educational attainment.

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