

Awareness of Patients Attending to Chest Clinic regarding Airborne Diseases

Zeinab Sami Abd El-alem¹, Ebtisam Mohamed Abd ElAal², Amina Abd El-Razek Mahmoud³ and Nashwa Samir Abd El Aziz⁴

(1) Primary Health Care Supervisor in South Sinai Hospital, Egypt, (2) Professor of Community Health Nursing, Faculty of Nursing, Benha University, Egypt, (3) Assistant Professor of Community Health Nursing, Faculty of Nursing, Benha University, Egypt and (4) Lecturer of Community Health Nursing, Faculty of Nursing, Benha University, Egypt.

Abstract

Background: Airborne disease is any disease caused by a microorganism and transmitted through the air. **Aim of the study:** Was to assess awareness of patients attending to Chest Clinic regarding airborne diseases in Benha City. **Research Design:** Descriptive research design was utilized to conduct this study. **Setting:** This study was conducted at Chest Outpatient Clinic affiliated to Benha University Hospital. **Sample:** Simple random sample was used this study and they were be chosen according to inclusion criteria; patients which their age is above 21 years. The total sample size was 303 patients. **Tools:** Two tools were used. **Tool I:** A structured interviewing questionnaire which consisted of three parts to assess demographic characteristics and medical history, knowledge of patients regarding airborne diseases and reported practices regarding prevention of airborne diseases. **Tool II:** Scale to measure the attitude of patients about airborne diseases. **Results:** 43.9% of the studied patients were age ranged from 40 to less than 50 years old, 44.2% of them had primary education, 51, 5 % of them had average knowledge level about airborne diseases, 70,6% of them had unsatisfactory practices level and 50, 8 % of them had positive total attitude level regarding airborne diseases. **Conclusion:** There were highly statistically significant relations between the studied patients' total knowledge scores, total practices, and their total attitude scores. **Recommendations:** Educational program should be developed and implemented for patients to improve their knowledge, practices and attitude toward prevention of airborne diseases.

Keywords: Airborne diseases, and Patient awareness.

Introduction

Airborne diseases are significant threat to public health. Airborne diseases are infectious diseases caused by microorganisms, such as bacteria or viruses transmitted through the air. Airborne diseases are characterized by the ability of the pathogens to be expelled from an infected person's respiratory system through actions such as coughing, sneezing, talking, or even breathing. The infectious particles, also known as droplets or aerosols, can remain in the air for extended periods to be inhaled by others in close proximity (Baraniuk, 2021).

World Health Organization (WHO) has indicated that about 3-5 million cases and 290 000-650 000 deaths occur annually from seasonal influenza epidemics (Fahim et al., 2021). Over 257 million cases of coronavirus disease 2019 (COVID-19) have been reported, and more than 5 million deaths globally (Jamison et al., 2022). It is estimated that 10 million people develop Tuberculosis (TB) every year, mostly in developing countries, and causing 1.5 million deaths per year (Fernandez et al., 2020).

Awareness of Patients Attending to Chest Clinic regarding Airborne Diseases

Airborne transmission is defined as the spread of infectious agent caused by the dissemination of droplets that remain infectious when suspended in air over long distances and time. Transmission of airborne agents is also depending on size and number concentration of inhaled droplets, which regulate the amount for respiratory deposition. Inhalation of airborne pathogens leads to direct and continuous deposition into human respiratory tract. Small aerosols penetrate deeply into the respiratory tract and even reach other vital organs (**Ratnakaran & Sahoo, 2020**).

Airborne diseases differ from each other depending on the nature of the organism, degree of contact, and individual factors. The most common types of airborne diseases are coronavirus (Covid-19), common cold, influenza, whooping cough, chickenpox, measles, mumps, tuberculosis and diphtheria (**Bhardwaj et al., 2021**). Airborne diseases cause many symptoms vary from mild to severe include coughing, sneezing, fever, nasal congestion or a runny nose, sore throat, shortness of breath, and fatigue. Body aches and muscle pain can be a result of the body's immune response caused by the infection. Symptoms vary depending on the specific airborne disease and individual factors (**Jain & Daniel, 2022**).

Airborne diseases can lead to a variety of complications which can be severe and life threatening. Complications can vary depending on the specific disease leading such as pneumonia, bronchitis and chest pain. In the case of severe disease, the patient presents dyspnea, respiratory failure, and multi organ dysfunction may occur. High risk groups, such as young children, older adults, or patients with weakened immune

systems, may experience more severe complications from airborne diseases (**Milano et al., 2023**).

Treatment for airborne diseases depends on the specific disease and causative agents include specific antibiotics for certain airborne diseases caused by bacteria, such as tuberculosis. Antiviral medications for viral airborne diseases, antiviral medications can be used in certain cases. In some cases, supportive care and symptom management are the focus. Medications for symptom relief such as pain relievers and cough suppressants. Supportive care is provided to relieve symptoms and help the body to recover such as rest, hydration, and maintaining a healthy lifestyle (**Juhi, 2023**).

Preventing the spread of airborne diseases is crucial to protect individuals and communities. Effective prevention methods include vaccination such as influenza, Covid - 19 and measles, good respiratory hygiene include covering mouth and nose with tissue or elbow when coughing or sneezing can help preventing the spread of respiratory droplets, hand hygiene, avoiding crowded places, minimizing close contact with individuals who are sick or in crowded places reduce the risk of exposure and proper ventilation in indoor spaces can help in removing airborne pathogens (**Deepa et al., 2022**).

Patients' awareness plays a crucial role in preventing airborne diseases. When patients are aware of potential risk factors, symptoms, and screening guidelines, they can take proactive steps to prevent the onset or progression of airborne diseases, patients can seek timely medical attention, leading to early detection and intervention. Increasing patient's awareness about airborne diseases significantly impact treatment outcomes and prognosis. Patients who are aware are more likely to actively

engage in preventive measures and self-care practices (**Guan et al., 2020**).

Community health nurses (CHNs) play a crucial role in preventing the spread of airborne diseases and ensuring the wellbeing of the community. Some responsibilities of community health nurses include assessing the health status of individuals, providing education on airborne transmission, preventive measures such as wearing masks, practicing good hand hygiene, maintaining social distancing, getting vaccinated and promoting healthy behaviors. CHNs provide care to individuals affected by airborne diseases, including who are hospitalized or isolating at home. CHNs assess and monitor patients' health status, provide symptom management, and offer emotional support. CHNs also help patients to manage the condition, prevent secondary complications, and achieve rehabilitation goals (**Farouk & Yousef, 2022**).

Significance of the study:

Airborne diseases are one of the main causes of human morbidity and mortality in Egypt. There have been 124,891 confirmed cases of COVID-19 with 7,069 deaths, is among the five countries reporting the highest number of cases of COVID-19 in Africa (**Abdel Raouf et al., 2023**). According to tuberculosis prevalence, Egypt is classified as a country with a medium disease burden, it is estimated that about 11,000 people got TB in 2021 with an incidence rate of 10 cases per 100,000 people (**Ahmed et al., 2023**). Egypt reported 6254 cases positive for influenza virus 87% of which were of A subtype and 13% influenza B virus (**Gomaa et al., 2022**).

The burden of mumps in Egypt is very high ranges from 100 to 1,000 cases per 100,000 people, and the epidemic peak occurs every 2–5 years (**Peng et al., 2021**).

According to the latest World Health Organization (WHO) data whooping cough (pertussis) deaths in Egypt reached 906 or 0.17% of total deaths per 100,000 of population ranks Egypt 76 in the world. WHO data published in 2020 measles deaths in Egypt reached 43 or 0.01% of total deaths (**World Health Ranking, 2023**). So that, the current study was carried out to assess the knowledge, practices and attitude of patients attending to chest clinic regarding airborne diseases.

Aim of the study:

The aim of this study was to assess awareness of patients attending to chest clinic regarding airborne diseases in Benha City.

Research questions:

1. What are patients attending to chest clinic knowledge regarding airborne diseases?
2. What are patients attending to chest clinic reported practices for prevention airborne diseases?
3. What are patients attending to chest clinic attitude regarding airborne diseases?
4. Is there a relation between socio-demographic characteristics of patients attending to chest clinic and their knowledge, practices and attitude regarding airborne diseases?
5. Is there a relation between patients attending to chest clinic knowledge, practices and attitude regarding airborne diseases?

Subject and Methods:

Research design: Descriptive research design was utilized to conduct this study.

Settings: This study was conducted at Chest Outpatient Clinic affiliated to Benha University Hospital.

Sampling: Simple random sample was used in this study. Sample size included 303 patients from total 1152 patients attended to Chest Outpatient Clinic in the last year

Awareness of Patients Attending to Chest Clinic regarding Airborne Diseases

(2021) and they were be chosen according to inclusion criteria; patients which their age is above 21 years and free from other diseases.

Tools of data collection:

Two tools were used to collect the data:

Tool I: A structured interviewing questionnaire: It was developed by the researchers, based on literature review of the current and past available national and international references related literatures about airborne diseases and written in a simple clear Arabic Language. It comprised of the following three parts:

First Part:

A- Was concerned with demographic characteristics of patients. It consists of 7 questions such as age, sex, educational level, place of residence, occupation, type of work and monthly income.

B- Was concerned with past medical history of patients which included 5 questions such as suffering from chronic disease, previous surgeries, family history of respiratory disease, previous hospitalized due to respiratory system disease and smoking.

Second part: It was concerned with knowledge of patients about airborne diseases which included 9 questions.

Scoring system:

The scoring system for patients knowledge was calculated as follows (2) score for complete correct answer, while (1) score for incomplete correct answer while (0) score for don't know. For each section of knowledge, the score of the questions were summed-up and the total divided by the number of the questions. These scores were converted into a percent score for the part. Total scores of knowledge = (18 points). Good when total score of knowledge were $\geq 75\% \geq$ (13 points) while considered average when the total score was $50 - < 75\%$

(9- < 13 points) while considered poor when the total score was $< 50\% <$ (9 points).

Third part: It was concerned with reported practices of patients regarding prevention of airborne diseases adapted from (**Omar& Amer, 2021**) which included 40 items divided into **I:- General practices** which included 13 items. **II:- Personal hygiene** which included 12 items divided into **A:- Hand washing** which included 7 items. **B:- Wearing mask practices** which included 5 items. **III:- Nutritional practices** which included 5 items. **IV:- Exercise** which included 2 items. **V: Vaccination** which included 2 items. **VI:- Rest and sleep** which included 2 items. **VII:- Follow-up** which included 4 items.

Scoring system:

The scoring system for patient's reported practices was calculated as follows as follows (2) score for always practicing (1) score for some times practicing while (0) score for never practicing. The score of the items was summed-up and the total divided by the number of the items. These scores were converted into a percent score for the part. The total reported practices scores = (80 points) were considered satisfactory if the score of the total reported practices $\geq 60\% \geq$ (48 points) while considered unsatisfactory if the score of the total reported practices were $< 60\% <$ (48 points).

Tool (II): Scale to measure the attitude of patients about airborne diseases which included 13 questions adapted from (**Hasan et al., 2021**). The questionnaire was measured on a three Likert scale (Agree, Neutral and Disagree).

Scoring system:

Attitude scale score was calculated as (2) scores for agree, (1) scores for neutral and (0) for disagree. The total attitude score= (26 points) was considered positive if the score $\geq 75 \geq$ (19 points) while considered neutral if the score is between $50 - < 75\%$ (13-

19 points) and considered negative if the score is $<50\%$ (13 points).

Validity of tools:

Content validity of the tools were done by five members of Faculty Staff Nursing experts from the Community Health Nursing Specialists they reviewed the tool for clarity, relevance, comprehensiveness, applicability and give their opinion.

Reliability:

Reliability of the tools was applied by the researchers for testing internal consistency of the tools, by administration of the same tools to the same subject under similar condition on one or more occasion. The reliability of the tools were done by Cornbrash's Alpha coefficient test which revealed that each of the two tools consisted of relatively homogenous items as indicated by moderate to high reliability of each tool. The internal consistency knowledge was 0,826%, practice was 0,791% f and attitude was 0,737 %.

Ethical consideration:

The Benha University Faculty of Nursing Scientific Research Ethical Committee accepted this study. All ethical issues were assured; an oral consent has been obtained from each patient before conducting the interview and given them a brief orientation to the purpose of the study. They were also reassured that all information gathered would be treated confidentially and used only for the purpose of the study. Patients had the right to withdraw from the study at any time without giving any reasons.

Field work:

Data were collected at a period of 6 months which started from the beginning December 2022 to end of May 2022; the study was conducted by the researchers for the studied sample in Chest Outpatient Clinic in Benha University Hospital. The

researchers visited the Benha University Hospital 2days/week (Sunday and Thursday) from

9:00 am to 12:00 pm to collect data. At the beginning of interview; The researchers explained the purpose and importance of the study to the patients and obtained their oral consent, the researchers collect the data from each patient, the average numbers of interviewing patients was between 5-6 patients/day depending on their response to the interviewer, each patient take about 20-25 minute to fill the sheet depending on their understanding and response. The researchers checked each filled questionnaire to ensure its completion.

Statistical analysis:

All data collected were organized, tabulated and analyzed by using the Statistical Package for Social Science (SPSS) Version (20), which was used frequencies and percentages for qualitative descriptive data and chi-square coefficient χ^2 for relation tests and mean and standard deviation was used for quantitative data, pearson correlation coefficient (r) statistical was used for correlation analysis and degree of significance was identified.

The observation differences and associations were considered as the following: (p-value) Highly significant when $P < 0.001$. Significant when $P \leq 0.05$. Not significant when $P > 0.01$.

Results:

Table (1): Shows that, 43.9% of the studied patients were age ranged from 40 to less than 50 years old with Mean \pm SD 46.72 ± 10.21 , 66.7% of them were male. 52.5% of the studied patients were lived in urban area and 44.2% of them had primary education. Regarding the occupation; 58.7% of the studied patients were worked and 51.7% of them had craft work. 44.2% of them had enough monthly income.

Awareness of Patients Attending to Chest Clinic regarding Airborne Diseases

Table (2): Shows that, 44.5% of the studied patients were suffered from hypertension. 88.1% of them hadn't previous surgery operation. 33.0% of them had family history of respiratory diseases. Regarding degree of kinship; 60,0% of them were sister. Also, 13.2% of the studied patients had hospitalized because of respiratory system diseases and 62.5% of them admitted hospital due to respiratory disease twice time. 40.9% of the studied patients were smoker and 69.3% of them smoking more than 10 cigarettes per day, and 64.7% of them were exposed to passive smoking.

Figure (1): Illustrated that; 51.5% of the studied patients had average knowledge level about airborne diseases, while 31.7% of them had poor knowledge level about airborne diseases, and 16.8% of them had good knowledge level about airborne diseases.

Figure (2): Illustrates that; 70.6 % of studied patients had unsatisfactory reported practices regarding airborne diseases and while, 29.4 % of them had satisfactory reported practices regarding airborne diseases.

Figure (3): Illustrates that; 50.8 % of the studied patients had positive total attitude level regarding airborne diseases, and while 49.2 % of them had negative total attitude level regarding airborne diseases.

Table (3): Shows that; there were highly statistically significant relations between the studied patients' total knowledge level regarding airborne diseases and their age, sex, place of residence, educational level and monthly income ($P < 0.001$), while there was statistically significant relation between the studied patients' total knowledge level and their occupation ($p \leq 0.05$).

Table (4): Shows that; there were highly statistically significant relation between the studied patients total reported practices level regarding airborne diseases and their age, sex, place of residence, educational level and monthly income ($P < 0.001$), while there was statistically significant relation between the studied patients total reported practices level of and their occupation ($p \leq 0.05$).

Table (5): Shows that; there were highly statistically significant relation between the studied patients total attitude level regarding airborne diseases and their age, educational level, occupation, and monthly income ($P < 0.001$), while there were statistically significant relation between the studied patients total attitude level of and their sex and place of residence ($p \leq 0.05$).

Table (6): Shows that; there were highly statistically significant correlation between the studied patients' total knowledge, total practices and total attitude scores ($P < 0.001$).

Table (1): Frequency distribution of the studied patients regarding their demographic characteristics (n=303).

Demographic characteristics	No.	%
Age/ years		
20 < 30	14	4.6
30 < 40	73	24.1
40 < 50	133	43.9
50 < 60	69	22.8
≥ 60	14	4.6
Mean ±SD	46.72±10.21	
Sex		
Male	202	66.7
Female	101	33.3
Place of residence		
Urban	159	52.5
Rural	144	47.5
Educational level		
Can't read and write	48	15.9
Primary education	134	44.2
University education or more	121	39.9
Occupation		
Work	178	58.7
Don't work	125	41.3
Type of work (n= 178)		
Office work	86	48.3
Craft work	92	51.7
Monthly income		
Enough and saving	38	12.5
Enough	134	44.2
Not enough	131	43.3

Awareness of Patients Attending to Chest Clinic regarding Airborne Diseases

Table (2): Frequency distribution of the studied patients regarding their past medical history (n=303).

Past Medical History	No.	%
* Suffering from chronic disease		
Don't suffer	117	38.6
Diabetic mellitus	110	36.3
Hypertension	135	44.5
Chronic obstructive pulmonary disease	25	8.2
Chest allergy	80	26.4
Previous surgeries		
Yes	36	11.9
No	267	88.1
*Type of operation (n=36)		
Discectomy	5	13.9
Hernia	8	22.2
Laparotomy	2	5.6
Ear, Nose & Throat	8	22.2
Cesarean section	13	36.1
Time of operation /years (n=36)		
5	12	33.3
7	1	2.8
10	22	61.1
12	1	2.8
Family history of a respiratory disease		
Yes	100	33.0
No	203	67.0
Degree of kinship (n=100)		
Husband	11	11.0
Wife	14	14.0
Mother	15	15.0
Sister	60	60.0
Previous hospitalized due to a respiratory system disease		
Yes	40	13.2
No	263	86.8
Number of admitted the hospital due to respiratory diseases(n=40)		
Once	15	37.5
Twice	25	62.5
Smoking		
Yes	124	40.9
No	179	59.1
Number of cigarettes smoke per day (n=124)		
Less than 10 cigarettes	38	30.6
More than 10 cigarettes	86	69.3
Exposed to passive smoking		
Yes	196	64.7
No	107	35.3

* The results are not mutually exclusive

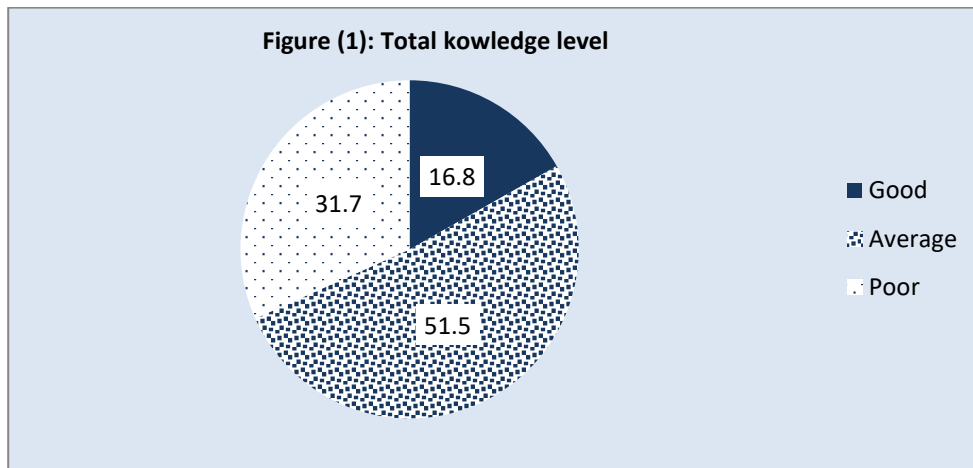


Figure (1): Percentage distribution of the studied patients regarding their total knowledge level about airborne diseases (n=303).

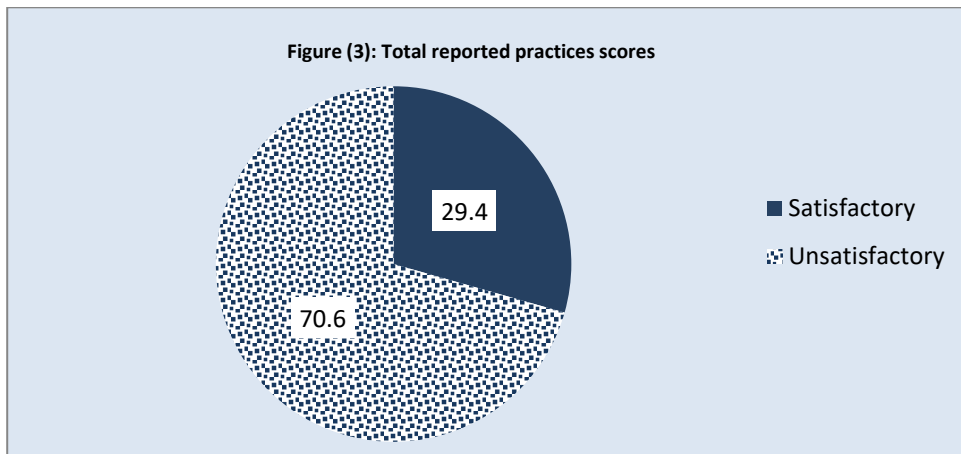


Figure (2): Percentage distribution of the studied patient total reported practices scores regarding airborne diseases (n=303).

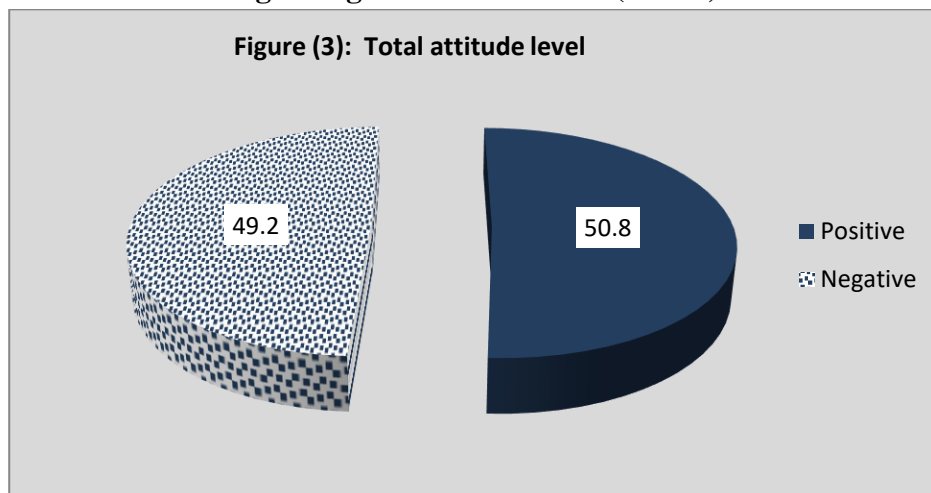


Figure (3): Percentage distribution of the studied patients total attitude level about airborne diseases (n=303).

Awareness of Patients Attending to Chest Clinic regarding Airborne Diseases

Table (3): Statistically relation between demographic characteristics of the studied patients and their total knowledge level (n=303)

Demographic characteristics	Total knowledge level						X2	P-value
	Poor (n=96)		Average (n=156)		Good (n=51)			
	No	%	No	%	No	%		
Age/ years								
20 >30	0	0.0	0	0.0	14	27.5	254.26	0.000**
30 > 40	0	0.0	36	23.1	37	72.5		
40 > 50	35	36.4	98	62.8	0	0.0		
50>60	47	49.0	22	14.1	0	0.0		
≥ 60	14	14.6	0	0.0	0	0.0		
Sex								
Male	38	39.6	113	72.4	51	100.0	59.524	0.000**
Female	58	60.4	43	27.6	0	0.0		
Place of residence								
Urban	35	36.5	73	46.8	51	100.0	58.082	.000**
Rural	61	63.5	83	53.2	0	0.0		
Educational level								
Can't read and write	48	50.0	0	0.0	0	0.0	133.06	0.000**
Primary education	37	38.5	73	46.8	24	47.1		
University education or more	11	11.5	83	53.2	27	52.9		
Occupation								
Work	59	61.5	82	52.6	37	72.5	6.761	0.034*
Don't work	37	38.5	74	47.4	14	27.5		
Monthly income								
Sufficient and saving	11	11.4	0	0.0	27	52.9	201.163	0.000**
Sufficient	14	14.6	120	76.9	0	0.0		
Insufficient	71	74.0	36	23.1	24	47.1		

Table (4): Statistically relation between demographic characteristics of the studied patients and their total reported practices level regarding airborne diseases (n=303)

Demographic characteristics	Total practices level				X ²	P-value
	Unsatisfactory (n=214).		Satisfactory (n=89)			
Age/ years						
20 >30	14	6.5	0	0.0	94.488	.000**
30 > 40	60	28.0	13	14.6		
40 > 50	57	26.6	76	85.4		
50> 60	69	32.2	0	0.0		
≥ 60	14	6.5	0	0.0		
Sex						
Male	156	72.9	46	51.7	12.727	.000**
Female	58	27.1	43	48.3		
Place of residence						
Urban	131	61.2	28	31.5	22.314	.000**
Rural	83	38.8	61	68.5		
Educational level						
Can't read and write	48	22.4	0	0.0	100.232	.000**
Primary education	119	55.6	15	16.9		
University education or more	47	22.0	74	83.1		
Occupation						
Work	134	62.6	44	49.4	4.505	.034*
Don't work	80	37.4	45	50.6		
Monthly income						
Sufficient and saving	25	11.7	13	14.6	103.204	.000**
Sufficient	58	27.1	76	85.4		
Insufficient	131	61.2	0	0.0		

Awareness of Patients Attending to Chest Clinic regarding Airborne Diseases

Table (5): Statistically relation between the studied patients' total attitude level regarding airborne diseases and their demographic characteristics (n=303)

Demographic characteristics	Total attitude level				X ²	P-value
	Negative (n=149)		Positive (n=154)			
Age/ years						
20 >30	0	0.0	14	9	41.35	.000**
30 > 40	31	20.8	42	27.3		
40 > 50	57	38.3	76	49.4		
50>60	47	31.5	22	14.3		
≥ 60	14	9.4	0	0.0		
Sex						
Male	91	61.1	111	72.1	4.127	.042*
Female	58	38.9	43	27.9		
Place of residence						
Urban	88	59.1	71	46.1	5.098	.024*
Rural	61	40.9	83	53.9		
Educational level						
Can't read and write	48	32.2	0	0.0	72.96	.000**
Primary education	68	45.6	66	42.9		
University education or more	33	22.1	88	57.1		
Occupation						
Work	112	75.2	66	42.9	32.62	.000**
Don't work	37	24.8	88	57.1		
Monthly income						
Sufficient and saving	11	7.4	27	17.5	76.04	.000**
Sufficient	36	24.2	98	63.6		
Insufficient	102	68.4	29	18.8		

Table (6): Correlation matrix between the studied patients' total knowledge score, total reported practices score and total attitude score

Total knowledge score	Total knowledge score		Total practices score	Total attitude score
	R	P-value		
Total knowledge score	R		.448	.869
	P-value		.000**	.000**
	N		303	303
Total practices score	R	.448		.592
	P-value	.000**		.000**
	N	303		303
Total knowledge score	R	.869	.592	
	P-value	.000**	.000**	
	N	303	303	

Discussion:

Airborne diseases are any infectious viral, bacterial, or fungal disease that is transmissible through the air in the form of aerosol particles or droplets. Airborne diseases can spread when an infected person releases droplets from coughing, sneezing, or even speaking. The virus or bacteria is secreted into air and lands on individuals or objects. When these pathogens are inhaled, they take residence inside the body and cause illness. They can also be contracted by touching entry points in body, including eyes, mouth, and nose and after touching a surface with the germs (Song et al., 2022).

Regarding demographic characteristics of the studied patients, the present study showed that; more than two fifth of studied patients' age was range from 40 to less than 50 years with mean \pm SD age was of 46.72 ± 10.21 . This finding was disagreed with **Fajemilehin et al. (2018)**, they conducted a study on knowledge and practice of airborne and droplet precautions within the emergency departments of selected hospitals in Nigeria, $n= 110$, and they found that 47.3 % of the studied sample their age was range from 31 to less than 40 years.

The present study revealed that; more than two thirds of the studied patients were male (table1). This finding was incongruent line with **Saveanu et al. (2022)**, they conducted a study on a cross sectional questionnaire-based survey on airborne infection control among Romanian people in Romania, $n = 202$, and they found that 59.9% % of the studied sample were female.

Regarding to past medical history of the studied patients, the present study revealed that; more than two fifths of the studied patients had suffered from hypertension. This finding was disagreed with **George (2022)**, who conducted a study on knowledge and

practice of airborne infection control measures by pulmonary TB patients in India, $n = 160$, and who found that 51.9% of the studied sample had suffered from diabetes.

Regarding total knowledge level of the studied patient's, the present study revealed that; approximately half of studied patients had average knowledge level about airborne diseases. This finding was disagreed with **Fajemilehin et al. (2018)**, they found that 67.2% of the respondents had good knowledge about airborne diseases.

Concerning to total reported practices level of the studied patients about airborne diseases, the current study revealed that; more than two thirds of studied patients had unsatisfactory reported practices regarding airborne diseases. This might be due to the study sample had poor knowledge about airborne diseases and this affect in their practice regarding prevention of airborne diseases.

Regarding patients total attitude level about airborne diseases the current study revealed that; slightly less than half of the studied patients had negative total attitude level regarding airborne diseases (figure 3). This finding was in the same line with **Santhanam (2020)**, who found that 49.9% of the studied sample had negative attitudes toward airborne diseases.

Concerning the relation between demographic characteristics of the studied patients and their knowledge regarding airborne diseases, the present study revealed that; there were highly statistically significant relations between of the studied patient's total knowledge level and their age and educational level. This might be due to the age and educational level had a positive effect on patients' ability to acquire knowledge well.

The current study revealed that; there were there was highly statistically significant

relation between the studied patients total reported practices level of education. This finding was agreed with **Alhazmi et al. (2019)**, they conducted a study on community's compliance with measures for the prevention of airborne infections in Riyadh, Saudi Arabia, n = 980, and they found that there was significant association between the studied sample level of education and their practices.

The present study revealed that; there were highly statistically significant relation between the studied patients' total attitude level and their age and educational level. This finding were agreed with **Krishna et al. (2022)**, they conducted a study on knowledge, attitude, and practice about airborne infection control guidelines, a cross sectional study among patients of tertiary care hospital in central India, n =301, and they found that there were a high significant relation between the studied sample and their age and level of education.

The present study showed that; there was highly statistically significant correlation between the studied patient's total knowledge score, total reported practices score and total attitude score. This finding was in the same line with **Pavani et al. (2023)**, they conducted a study on knowledge of droplet and airborne isolation among students in South India, n = 250, and they found that a strong positive relation between knowledge, practices and attitude. This might be due to the studied patients had poor knowledge and unsatisfactory practices about airborne diseases could effect on their attitude toward prevention of airborne diseases.

Conclusion:

More than one half of studied patients had average knowledge level regarding airborne diseases, more than two thirds of them had unsatisfactory reported practices regarding

airborne diseases, and more than one half of them had positive total attitude level regarding airborne diseases. There were highly statistically significant relations between of the studied patient's total knowledge level and their age, sex, place of residence, educational level and monthly income. There were highly statistically significant correlations between the studied patients' total knowledge score, total practices score and total attitude score.

Recommendations:

- Educational program should be developed and implemented for patients to educate them with the most current information and proper practices regarding airborne diseases.
- Booklets should be available and distributed to all patients about airborne diseases and health related practices.
- Further studies on a large probability sample from different geographical areas to attain more generalizable results.

References:

- Abdel Raouf, F., Hosny Shalaby, M., and Fathi, N. (2023).** Effect of Psycho Educational Intervention Program on Psychological Problems among Nurses Caring for Patients. *Journal of Nursing Science Benha University.* 4(2). Pp. 417-432.
- Ahmed, F., Abd El-Megeed, A. and Sobhy, D. (2023).** Healthy Lifestyle of Patient with Pulmonary Tuberculosis. *Journal of Nursing Science Benha University.* 4(2). Pp. 851-862.
- Alhazmi, A., Alshammari, S., Alenazi, H., Shaik, S., AlZaid, H., Almahmoud, N., and Alshammari, H. (2019).** Patient's compliance with measures for the prevention of airborne diseases infections in Riyadh, Saudi Arabia. *Journal of family & community medicine.* 26(3). P.173.

- Baraniuk, C. (2021).** What do we know about airborne transmission of SARS-CoV-2?. *Bmj*. Pp.373.9.
- Bhardwaj, K., Bhardwaj, N., Kumar, V., Bhatt, D., Azzouz, A., Bhaumik, J. and Deep, A. (2021).** Recent progress in nanomaterial-based sensing of airborne viral and bacterial pathogens. *Environment international*. 146 (3). P.1.
- Deepa, N., Parveen, A., Khurshid, A., Ramachandran, M., Sathiyaraj, C., and Vimala, C. (2022).** A study on issues and preventive measures taken to control Covid-19. In *AIP Conference Proceedings*. AIP Publishing. 2393(1). P. 174.
- Fahim, M., AbdelGawad, B., Hassan, H., Naguib, A., Ahmed, E., Affi, S. and Mohsen, A. (2021).** Epidemiology and outcome of influenza-associated infections among hospitalized patients with acute respiratory infections, Egypt national surveillance system, 2016-2019. *Influenza and Other Respiratory Viruses*. 15 (5). Pp. 589-598.
- Fajemilehin, B., Dare, A. and Oluseyi, A. (2018).** Knowledge and practice of airborne and droplet precautions within the emergency departments of selected hospitals in Osun state, Nigeria. *International journal of caring sciences*. 11(3). Pp.1539-1545.
- Farouk, A., and Yousef, N. (2022).** Community Awareness, Preparedness, Precautionary Measures and Self-Quarantine Activities Related to COVID-19 Pandemic in Egypt. *Egyptian Journal of Health Care*. 13(1). Pp. 595-611.
- Fernandez, V., Soriano, V., Barreiro, P., de Mendoza, C. and Artacho, Á. (2020).** Coronavirus and other airborne agents with pandemic potential. *Current opinion in environmental science & health*. 17(10). Pp 41-48.
- George, J. (2022).** Knowledge and practice of airborne infection control measures by pulmonary TB patients. *Achutha Menon Centre for health science studies*. 13(7). P.117
- Gomaa, R., Badra, R., El Rifay, S., Kandeil, A., Kamel, N., Abo Shama, N. M., El-Shesheny, R., Barakat, B., Ali, M. and Kayali, G. (2022).** Incidence and seroprevalence of seasonal influenza A viruses in Egypt: Results of a community-based cohort study. *Influenza and other respiratory viruses*. 16(4). Pp. 749–755.
- Guan, L., Zhou, L., Zhang, J., Peng, W., and Chen, R. (2020).** More awareness is needed for severe acute respiratory syndrome coronavirus 2019 transmission through exhaled air during non-invasive respiratory support: experience from China. *European Respiratory Journal*. 55(3). P.111
- Hasan, H., Raigangar, V., Osaili, T., Neinavaei, E., Olaimat, N., and Aolymat, I. (2021).** A cross-sectional study on university students' knowledge, attitudes, and practices toward COVID-19 in the United Arab Emirates. *The American journal of tropical medicine and hygiene*. 104 (1). P. 75.
- Jain, U. and Daniel J. (2022).** Influenza Persists. *ASA Monitor*. 2(86). Pp. 24–25.
- Jamison Jr, A., Anand, S., Trovão, S., Guarnieri, J., Topper, M. J., Moraes-Vieira, P. and Beheshti, A. (2022).** A comprehensive SARS-CoV-2 and COVID-19 review, Part 1: Intracellular overdrive for SARS-CoV-2 infection. *European Journal of Human Genetics*. 30 (8). Pp. 889-898.
- Juhi, M (2023).** Treatment of airborne diseases. Available online at: <https://www.buzzrx.com/blog/common-diseases-spread-by-coughing-and-sneezing>.
- Krishna, H., Bhargava, J., Jain, A., Patel, V., and Prakash, B. (2022).** Knowledge, attitude, and practice about airborne infection control guidelines. A cross sectional study among patients of tertiary care hospital in central India. *Asian Journal of Medical Sciences*. 13(6). P. 190.

Milano, G., Capitani, E., Camarri, A., Bova, G., Capecci, P., Lazzeri, G. and Manini, I. (2023). Surveillance of Influenza and Other Airborne Transmission Viruses during the 2021/2022 Season in Hospitalized Subjects in Tuscany, Italy. *Vaccines*. 11(4). P. 776.

Omar, D., and Amer, S. (2021). Egyptian public's knowledge, attitudes, perceptions, and practices toward covid-19 infection and. their determinants. A cross-sectional study, 2020. *Open Access Macedonian Journal of Medical Sciences*. 9 (3). Pp.250-259.

Pavani, B., Akkaloori, A., Chandran, S. , Malarvizhe, S., Gomathy, M., and Vinodhini, S. (2023). Knowledge of droplet infection and airborne isolation among students in South India. A questionnaire study psychiatry. 37 (1). P.48.

Peng, Y., Yang, T., Zhu, Y., Hu, Q., Wang, Y., Zhao, Z. and Chen, T. (2021). Estimating the transmissibility of mumps: A modelling study in Wuhan City, China. *Frontiers in Medicine*. 8 (7). Pp. 683720.

Ratnakaran, A., and Sahoo, S. (2020). Risk of airborne infection and transmission-based precautions in dental setting. *Journal of Operative Dentistry and Endodontics*. 5(1). P. 32.

Santhanam, A. (2020). Awareness and knowledge in transmission of airborne diseases in South Indian Population. *International Journal of Pharmaceutical Research* (09752366). 123) 2). Pp. 2163-2174.

Saveanu, C., Zetu, I., Scheuleac, A., Saveanu, A., and Romanec, C. (2022). A

cross-sectional, questionnaire-dased survey on air infection control among Romanian People. *International Journal of Environmental Research and Public Health*. 19 (19). P.12140.

Song, L., Zhou, J., Wang, C., Meng, G., Li, Y., Jarin, M., and Xie, X. (2022). Airborne pathogenic microorganisms and air cleaning technology development. A review. *Journal of hazardous materials*. 424(8). P.127429.

World Health Ranking, (2023). Incidence of whooping cough in Egypt. Available at: www.worldlifeexpectancy.com/country-health-profile/egypt. Accessed on 15 August 2023.

وعي المرضى المترددين علي عيادة الصدر عن الأمراض المنقولة عن طريق الهواء

زينب سامي عبدالعليم- ابتسام محمد عبدالعال- أمينة عبدالرازق محمود- نشوي سمير عبدالعزيز

تمثل الأمراض المنقولة عن طريق الهواء تحديًا كبيرًا للصحة العامة وهي عدوى تسببها الكائنات الحية الدقيقة، مثل البكتيريا أو الفيروسات أو الفطريات والتي تنتقل في شكل قطرات ويمكن استنشاقها أو ملامستها للأغشية المخاطية، مما يؤدي إلى الإصابة بالعدوى وتهدف الدراسة إلى تقييم وعي المرضى المترددين علي عيادة الصدر عن الامراض المنقولة عن طريق الهواء وأجريت هذه الدراسة بعياده الصدر بمستشفى بنها الجامعي وقد تم استخدام العينة الملائمة في هذه الدراسة لاختيار المرضى حيث بلغ عددهم 303 مريضاً. أظهرت الدراسة أن أكثر من نصف المرضى لديهم مستوى معلومات متوسطة عن بالأمراض المنقولة عن طريق الهواء، وكان أكثر من ثلثهم لديهم ممارسات غير مرضية فيما يتعلق بالأمراض المنقولة عن طريق الهواء، وكان أكثر من نصفهم لديهم سلوك إيجابي تجاه الأمراض المنقولة عن طريق الهواء. وجدت علاقة ذات دلالة إحصائية عالية معلومات المرضى والعمر، الجنس، مكان الإقامة، المستوى التعليمي والدخل الشهري. كما وجدت علاقة ذات دلالة إحصائية عالية بين معلومات المرضى و ممارساتهم وسلوكهم تجاه الامراض المنقولة عن طريق الهواء. كما أوصت الدراسة بأهمية تطوير وتنفيذ برنامج تدريبي لكبار السن لتحسين معلوماتهم وممارساتهم وضع وتنفيذ برنامج تعليمي للمرضى لتحسين معلوماتهم وممارساتهم وسلوكهم تجاه الوقاية من الأمراض المنقولة عن طريق الهواء.