

Knowledge on Pulmonary Hygiene and Sociodemographic Factors affecting it among Health Professionals working in Two Government Hospitals, North East Ethiopia

Prema Kumara,¹ Yemiamrew Getachew,² Wondwossen Yimam³

¹Assistant Professor, Department of Comprehensive Nursing, College of Medicine and Health Sciences

²Head, Department of Comprehensive Nursing, College of Medicine and Health Sciences

³Dean, School of Nursing and Midwifery, College of Medicine and Health Sciences
Wollo University, Ethiopia

Introduction: Pulmonary hygiene is formerly referred to as pulmonary toilet which is a set of methods used to clear mucus and secretions from the airways and it depends on consistent clearance of airway secretions.

Objective: To determine the level of knowledge and to identify the socio-demographic factors affecting knowledge on pulmonary hygiene among Health Professionals.

Methodology: Institution based cross sectional study design was employed among one hundred twelve health professionals using systematic random sampling technique. The collected data were analyzed using descriptive and inferential statistics.

Results: The mean knowledge score of the total sample was 13.80 (\pm 3.01 SD). Subjects who scored above the mean value were categorized as having good level of knowledge. But only 37 (33 %) study participants had good knowledge about pulmonary hygiene and rest 67 % had poor knowledge. In the multivariable logistic analysis, Married subjects were 3.7 times (AOR = 3.7, CI=1.38, 10.04) more likely to have good knowledge as compared to single individuals. Female participants were 0.24 times (AOR = 0.24, CI = 0.1, 0.7) more likely to have poor knowledge on pulmonary hygiene as compared to their male counterparts. Participants who had no previous training were 0.1 times (AOR = 0.1, CI = 0.1, 0.5) more likely to have good knowledge than subjects who had previous training on pulmonary hygiene.

Conclusion & Recommendation: The present study concluded that about 65% of health professionals have lack knowledge regarding Pulmonary Hygiene and recommended that further study can be conducted with large similar groups with interventional strategies by involving other health professionals as well.

Key words: Pulmonary Hygiene, Knowledge, Health professionals, Socio Demographic Factors

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I. Introduction

Pulmonary hygiene is formerly referred to as pulmonary toilet which is a set of methods used to clear mucus and secretions from the airways. It is also called as respiratory health, pulmonary rehabilitation and pulmonary health[1]. Pulmonary hygiene depends on consistent clearance of airway secretions. Normal airway clearance is accomplished by 2 important mechanisms: the mucociliary clearance system and the ability to cough. Impaired mucociliary clearance is linked to poor lung function in a broad range of diseases and disabilities. Because at-risk individuals are prone to recurrent episodes of respiratory inflammation, infection, and, eventually, irreversible lung damage, improvement of mucociliary clearance is a vital treatment goal - one that can be accomplished with an individualized bronchial hygiene plan that includes effective airway clearance therapy [2].

The word pulmonary refers to the lungs. The word toilet is related to the French toilette, refers to body care and hygiene; this root is used in words such as toiletry that also relate to cleansing. Pulmonary hygiene prevents the collapse of the alveoli of the lungs and rids the respiratory system of secretions, which could cause respiratory infections. It can also decrease pulmonary shunting, increase the functional reserve capacity of the lungs, and prevent respiratory infection after chest trauma [3].

Methods used for pulmonary hygiene include chest physiotherapy, postural drainage, coughing and breathing exercise, suctioning and tapping, incentive spirometer, bronchoscopy, blow bottles, tracheostomy care and so on. Pulmonary hygiene used to prevent and reduce the life threatening pulmonary complications such as obstruction, hypoventilation, hypoxemia and infections in order to restore muscular and pulmonary function as fast as possible. Globally more than 1.5 million deaths annually from respiratory infections are attributable to the environment, including at least 42% of lower respiratory infections and 24% of upper respiratory infections

in developing countries [4]. Both globally and regionally there is a paucity of studies in Africa, South East Asia and the Eastern Mediterranean region. There is a need for governments, policy makers and international organizations to consider strengthening collaborations to address COPD globally [5].

WHO reported that, tuberculosis is accounted for 2.4% of deaths (230,000 deaths) in sub Saharan Africa countries and the environmental burden by the disease category the Respiratory infections stands/ranks 2nd in Ethiopia [6]. Centers for Disease Control and Prevention (CDC) Global Health- Ethiopia 2014, says Lower respiratory infections accounts for 10% of death and it is the leading cause of death in the country [7]. According to The National Center for Biotechnology Information (NCBI) chronic obstructive pulmonary (COPD) account for 2.7% to 4.3% morbidity in Amhara Region, Ethiopia [8]. Thus, the pulmonary hygiene and its associated elements are very essential in preventing and promoting respiratory health, since health professionals are the life savers of the patients based this result interventional strategies could be applied to increase the efficacy on pulmonary hygiene among health professionals.

II. Objectives

- 1.1. To determine the level of knowledge on pulmonary hygiene among Health Professionals working in Dessie Referral Hospital and Kemissie General Hospitals, North East Ethiopia
- 2.2 To identify socio-demographic factors affecting knowledge on pulmonary hygiene among Health Professionals working in Dessie Referral Hospital and Kemissie General Hospital North East Ethiopia

III. Methodology

3.1 Research design: Institution based cross sectional study design was employed.

3.2 Setting and Sampling: The study was conducted in Dessie Referral Hospital and Kemissie General Hospital, North East Ethiopia, 2017. Systematic sampling technique was used to select total of 112, 32 general practioners and 75 Nurses.

3.3 Description of the tool: The tool is divided into mainly two parts,

Part-A: Demographic pro-forma of the Health professionals.

Part-B: Structured knowledge questionnaire

3.4. Content validity: Validity of the tool was ascertained in consultation with prepared by emergency and critical care and adult health specialty professionals. The experts were requested to judge the items for accuracy, relevance, appropriateness and degree of agreement. The suggestions of the experts were incorporated into the tool and the tool was modified accordingly.

3.5. Pilot study: Pilot study was conducted in Woldia General Hospital with 10% of the sample size before the main study to identify potential problems in the proposed study such as data collection tools and to check the performance of the data collectors and questionnaires used in the pre-test did not included in the analysis as part of the main study. English version of questionnaire was used to assess knowledge on pulmonary hygiene among health professionals.

3.6. Data collection procedure: Prior permission was obtained from the concerned authority. Informed consent obtained from the subjects. Once all necessary data obtained, data was checked for completeness edited, cleaned, coded and entered in to and analyzed by SPSS version 20 for windows. Bivariate and multivariable regressions used to identify the independent predictors knowledge on pulmonary hygiene.

3.7. Statistical analysis: The collected data were analyzed by using descriptive (frequency, distribution, percentage, mean and standard deviation) and inferential statistics (Chi square test, paired t test). This was done by entering each independent variable separately into bivariate analysis. Then, variables that showed statistical significant association with p-value of less than 0.30 on bivariate analysis were entered into multivariate logistic regression. Then, variables which showed statistical significant association with p-value less than 0.05 on multivariable regression were considered as predictors of knowledge on pulmonary hygiene.

IV. Results

4.1 Demographic Variables

Table I. Socio-demographic characteristics of the study participants (n =112)

Participants Characteristics		Frequency	Percent (%)
Sex	M	69	61.6
	F	43	38.4
Age (in years)	< 25	54	48.2
	25+	58	51.8
Ethnicity	Amhara	17	15.2
	Oromo	79	70.5
	Gurage/Tigray/	16	14.3
Religion	Orthodox	53	42.0
	Muslims	47	47.3
	Protestant/Catholic	12	10.7

Marital status	Single	55	49.1
	Married	57	50.9
Profession	Doctors	37	33
	Nurses	75	67
Work experience(Yrs)	< 5 years	91	81.3
	5+ years	21	18.8
Recent training on Pulmonary hygiene	Yes	18	16.1
	No	94	83.9

A total of 112 participants were included in this study. Out of 112 of total participants, 69 (61.6%) were females and their mean age was 26.10 (± 3.47 SD) years. Fifty four (48.2%) of respondents were in the age group 21- 25 years old. The majority of the respondents were Orthodox 53 (47.3%) followed Muslims by 47 (42%). Fifty- five (49.1%) of the participants were single. In this study the majority of participants 91(81.3%) had work experience less than five years. Majority of the respondents (52%) had no recent training on pulmonary hygiene . Around sixty- three percent of participants were nurses.

Level of knowledge on pulmonary hygiene

Knowledge was computed using 26 questions related to pulmonary hygiene. The mean knowledge score of the total sample was 13.80 (± 3.01 SD). Subjects who scored above the mean value were categorized as having good level of knowledge. But only 37 (33 %) study participants had good knowledge about pulmonary hygiene.

Socio-demographic factors related to level of knowledge

Among variables entered in the bi-variate analysis, Sex, marital status, work experience, previous training and educational level showed significant associations with the level of knowledge on pulmonary hygiene. Variables with P-value ≤ 0.30 were entered in the multivariable logistic analysis but there was no significant association between work experience and educational level with knowledge on pulmonary hygiene. However, females, married & subjects who had no previous training were significantly associated with knowledge on pulmonary hygiene.

Table II. Bivariate and multivariate logistic regression predicting the level of knowledge of participants towards pulmonary hygiene among study participants of 2 Government Hospitals, Ethiopia, 2017GC (n =112)

Factors	Level of Knowledge				COR (95% CI)	P-value	AOR (95% CI)	P value	
	Good		Poor						
	n	(%)	n	(%)					
Sex	Males (Ref)	18	42	25	58	1			
	Females	19	27.5	50	72.5	4.12 (1.80,9.64)	0.01*	0.24 (0.08,0.66)	0.006*
Age category	<25(Ref)	17	31.5	37	68.5	1	0.74		
	25+	20	34.5	38	65.5	0.87 (0.39,1.92)			
Marital status	Single (R)	12	21.8	43	78.2	1			
	Married	25	43.9	32	56.1	0.36 (0.16,0.82)	0.02*	3.7 (1.38,10.04)	0.009*
Profession	Doctors(Ref)	14	37.8	23	62.2	1			
	Nurses	23	30.7	52	69.3	1.45 (0.6,3.1)	0.45		
Work experience(yrs)									
	< 5 years (Ref)	34	37.8	56	62.2	1	0.04*		
	5+ years	3	13.6	19	86.4				
Recent training on Pulmonary hygiene									
	Yes (Ref)	2	11.1	16	88.9	1			
	No	35	37.2	59	62.8	0.21 (0.05,0.97)	0.04*	0.08 (0.01,0.47)	0.005*

*(p < 0.05)

In the multivariable logistic analysis, Married subjects were 3.7 times (AOR = 3.7, CI=1.38, 10.04) more likely to have good knowledge as compared to single individuals. Female participants were 0.24 times (AOR = 0.24, CI = 0.1, 0.7) more likely to have poor knowledge on pulmonary hygiene as compared to their male counterparts. Participants who had no previous training were 0.1 times (AOR = 0.1, CI = 0.1, 0.5) more likely to have good knowledge than subjects who had previous training on pulmonary hygiene.

V. Discussion

The current study results showed that only about 33% of the study participants had good level of knowledge towards pulmonary hygiene. The mean knowledge score of the total sample was 13.80 (\pm 3.01 SD). Subjects who scored above the mean value were categorized as having good level of knowledge. But only 37 (33 %) study participants had good knowledge about pulmonary hygiene. This result resembles the non-experimental research study conducted in KLE's Dr. Prabhakar Kore hospital to assess the knowledge regarding pulmonary hygiene among staff nurse working at specialized areas. Where in result revealed that the overall knowledge of nurses was less (63.33%) and need training and update through continuing education, information module and so on [9].

The study conducted by the Belgium Flemish Society for 638 Critical Care Nurses. Most respondents were females (n = 472; 74.0%); about one quarter 9 (n = 153; 24.0%) had < 1 year of ICU experience, 111 (17.4%) 1 -5 years, 100 (15.7%) 6 – 10 years, and 274 (43.0%) > 10 years. A degree in emergency and critical care was held by 68% (n = 437) of respondents. The average score was 3.7 on nine questions. No substantial differences were found between males and females. Nurses with < 1 year experience performed worse than nurses with > 1 year experience. Nurses holding the degree had significantly better scores than those not holding it. Linear regression analysis identified years of experience and degree to be independently associated with better knowledge [10].

The present study result revealed that, Married subjects were 3.7 times (AOR = 3.7, CI=1.38, 10.04) more likely to have good knowledge as compared to single individuals. Female participants were 0.24 times (AOR = 0.24, CI = 0.1, 0.7) more likely to have poor knowledge on pulmonary hygiene as compared to their male counterparts. Participants who had no previous training were 0.1 times (AOR = 0.1, CI = 0.1, 0.5) more likely to have good knowledge than subjects who had previous training on pulmonary hygiene.

VI. Conclusion

Hence the study concluded to assess the knowledge on pulmonary hygiene and influence of Socio demographic variables among health professional. Furthermore, the level of knowledge about the Pulmonary Hygiene was very low. So there a need to incorporate pulmonary hygiene in the on job training strategy of regional health office and other stake holders.

VII. Recommendations

A similar study can undertake with a larger sample to generalize the findings.
A similar study may be conducted by using interventional strategies

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