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The Assessment of Knowledge and Practices of Health Care Workers regarding Tuberculosis Protocols

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Abstract

TB is the dangerous diseases and public hospitals of developing countries deal with a lot of patients effected form this disease. People living in the developing countries are not aware about the causes of this disease and lack the measures to control over this disease. The current study examines the level of knowledge and assess practices of nurses regarding TB control among health care workers of the public hospitals of Lahore.

The data was collected from 115 nurses of two public hospitals of Lahore, Pakistan through simple random sampling. The results of the current study reveal that most of the nurses and other health care staff have sufficient knowledge and following the practice protocols regarding TB. The study also presents the limitations and recommendations.

Key words: Knowledge and practice of Tuberculosis.

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INTRODUCTION

Tuberculosis is the main public health problem in the world. This study shows that one-third population of world suffering in Tuberculosis (Toth A 2004 Nov). According to WHO, Tuberculosis is caused by the Mycobacterium tuberculosis bacteria and most often occur in lungs and sometime other than lungs (Anonymes jan 2018).TB is infectious air born disease which spread by the different ways like coughing, sneezing. Tuberculosis has been spread by the traveling of human population. TB transmission have been documented in aircraft and ship from passenger to other staff but the risk of transmission very low (Al-Jahdali H1 2003 Feb). Tuberculosis (TB) can be transmitted from one to another unless we get a microbiological proof of 3 negative smears (AFB) (Buregyeya, Kasasa et al. 2016).Tuberculosis is one of the biggest reason of deaths among world due to its infectious nature (Murray, Lopez et al. 1996). The transmission of this deadly organisms from patients to health care personal is not so much under consideration in various developed & under developed countries. Major reasons of transmission are late diagnosis because patient is too much infectious at that stage. The close contacts and health care workers are on major risk of getting disease at this stage. Transmission of Tuberculosis in health care workers like nurses and other staff is major problem now a day and a study reveal that every year many cases reported. There are many risk factors involve the transmission of TB such as patient population, local prevalence of TB and occupational group (Menzies D 2007 Jun;11). Multi drug resistance tuberculosis is a rising universal dilemma& its treatment is most complicated and expensive in all over the world. There is frequently a delay in recognizing drug-resistant TB that can lead to protracted exposure, which increases TB transmissions. In addition, patients with Multi drug resistance TB remain infectious for much longer, even if treatment is initiated (Gizaw, Alemu et al. 2015). Different studies reveal the story of TB. In 2013 the World health organization reported, the prevalence of TB cases 8.6 million and the mortality rate is 1.3 million projected in 2012 in the entire world (Noé, Ribeiro et al. 2017).

While in South Africa and Asia, the incidence of TB along with PLWHA (people living with human immune deficiency virus and

acquired immune deficiency syndrome) is estimated to 303 and 264 cases per 100,000 populations correspondingly and 75 percent of entire death occur in these area in 2012. Above 4 million people bear active tuberculosis & huge loss of people like 650,000 deaths occurred every year in Africa. Death rate is increase in the world due to TB. Like in 2014, there were 9.6 million new cases registered and 1.5 million deaths due to TB (Gizaw, Alemu et al. 2015). Globally Pakistan ranks 5th among the 22 high burden countries of the Eastern Mediterranean Region (Anonymes November 15, 2011). According to the survey conducted in 2014 Pakistan is at 4th number among the 27th countries in the world in Multi drug resistance (MDR) TB (Reporter March 25, 2014).

Tuberculosis control is further to be got if the level of knowledge regarding TB is increased among all health workers who manage high risk patients. Furthermore, to control tuberculosis the worldwide efforts was strengthen in 1991 and documented as a main international public health dilemma. In 2000 to control tuberculosis were developed two main targets such as case detection rate is 70 % o & the cure rate is 85% of cure rate. The DOTS (directly observed treatment short course) strategy started in 1994 & STOP TB strategy in 2006 approved by the World health organization (Noé, Ribeiro et al. 2017).

Tuberculosis remains the major problem in the whole world. Question is that why it remains? Lack of knowledge about TB among health care workers and practices regarding TB control and prevention and also shortage of resources and shortage of accesses towards their resources is a big reason for least empowerment of tuberculosis patients in Pakistan (Khan 2017).

Objective of study

The main objective of the study is to determine the level of knowledge and assess practices regarding TB care and control among health care workers of the district of Lahore.

Research questions

1. What is level of knowledge of health care workers regarding TB?

2. What is the level of practices of health care workers regarding TB?

LITERATURE REVIEW

Tuberculosis is the leading infectious disease in the whole world specially in under develop countries and in industrialized area mostly occur in women and children (Kato, Nagashima et al. 2007). The risk factor of tuberculosis in health care workers was substantial in the era before starting any medicine but quickly fall down after 1950 because of less or low incidence of disease in the population (Menzies , Fanning et al. 1995). The one study shows that 24% of the attendants gave correct answers of TB questionnaire. 62% of the health care workers had good knowledge about tuberculosis but mostly non-clinical and non-attendants who never had any tuberculosis exposure were the among having least knowledge about Tuberculosis. Only 7% of all individuals knew all the basic knowledge about TB and source of transmission. They also knew that mask is not a 100% safety for the person wearing it for safety purpose. Overall analysis shows that non-clinical persons have less and condensed knowledge about tuberculosis. Mostly respondents were highly conscious for infection control and were very sure for the transmission of infection (Buregyeya, Kasasa et al. 2016). Another study shows that good practices and level of knowledge affect the TB infection control (TBIC). This study conducted by Michelle Engelbrecht and coworkers André Janse van Rensburg, Gladys Kigozi in the area of south Africa in which a cross-sectional self-advice survey in which number of nurses was 202 and number of facility-based society healthcare workers was 34 as well as facility comments were undertaken at all 41 major health care facilities in a selected area of the Free State Province. The huge number of female was 200 and the average age was 44.19 years. Excellent quality levels of TBIC knowledge were recorded, with 42.8 percent having a standard score and 31.8 percent a good score. Many respondents like nurses and health care workers had positive attitudes towards TB infection control practices. While good TB infection control practices were reported by 72.9 % of the respondents, observations exposed this to not importantly be the case. For every unit increase in attitudes, behaviors, good practices

increased 1.09 times. Many respondents with more than eighty percent knowledge were 4.029 times more likely to have excellent practices when contrasted to respondents with deprived levels of knowledge. The study did not find TB and HIV training is beneficial for good practices (Engelbrecht, van Rensburg et al. 2016). Another KAP survey conducted mentions that average level of knowledge was 14.89 points out of a total 26 points. Less than 30 percent of respondents had heard of gene X-pert MTB/RIF. Seventy per cent agreed there was stigma linked with TB and 48.2 percent believed this stigma was greater than that connected with HIV. The mean of practice was 3.2 out of 9 points (Noé, Ribeiro et al. 2017).

Statement of problem and significance

Tuberculosis is the major disease in the world. As we know that Pakistan is at 5th number in tuberculosis disease. Tuberculosis is spread through the air and cough. Main cause of tuberculosis is the lack of knowledge regarding TB and practices to infection control. The chance of TB is at high in health care workers rather than others. Health care worker is one who deliver care and services to patient regarding TB. The health of health care workers is very important to control the TB infection. Control of TB is very important in the world, but many problems exist by controlling it like lack of knowledge and practices among the health care workers and lack of communication barrier with patients. Many action points come to mind, it's very important time to educate not our self but also our health care workers regarding TB prevention and control and to avoid this problems collaboration is required between the private sectors, public and government sectors. By strengthen this system develop the better TB treatment as well improving the health system in Pakistan. So that's why it is very important to get knowledge and practice among health care workers regarding tuberculosis. The main purpose of this study is to find out the level of knowledge and assess practice regarding Tuberculosis care and control along with health care workers of district of Lahore.

METHODOLOGY

Introduction

This study is conducted to assess the knowledge and practices of the Gulab Devi Chest Hospital Lahore Health care workers.

Study design

A quantitative and descriptive cross-sectional research design will be used for this study to assess the knowledge and practices towards Tuberculosis among Gulab Devi Chest Hospital Lahore Health care workers.

Setting

Setting of the study will be the Gulab Devi Chest Hospital Lahore Ferozepur Road Lahore.

Target population

My target population will be the Health care workers Gulab Devi Chest Hospital Lahore. The participants will be belonging to different socioeconomic level and different demographical background; the participants will be male and female.

Technique and size of sample:

Information will be collect from the members by self-administered survey form & the participant will be chosen by simple random sampling method, size of sample in this study will be 114 which are calculate by the ***Slovins formula of sampling***.

If Total number of Health care workers 160

If N=Population, n=Sample size, E= Margin of error

$n=N/1+ (N) (E)^2$

$n=160/1+ (160) (0.05)^2$

$n=160/1+ (160) (0.0025)$

$n=160/2.25=114$

Research tool

A self-administered version questionnaire was adopted from the article (Buregyeya, Kasasa et al. 2016) and (Gizaw, Alemu et al. 2015) will be use to gather information from the participants.

Questionnaire is consisting of three sections, (A Section) composed of demographic information which consist of Name (optional), gender, organization, marital status, Age group, designation, qualification, stay in organization of the participant. (B Section) composed of the questions regarding the knowledge of tuberculosis which contain 14 question adopted from (Buregyeya, Kasasa et al. 2016); all participants can respond these questions by nominal scale (Yes/No). The last (C section) consist of 19 questions about the assessment of infection control practices of tuberculosis adopted from (Gizaw, Alemu et al. 2015) and the participants will be answer to the questions according to Likert scale(Never/Sometimes/Always).

Data Collection Plan:

Data collection plan is one of the main sources to collect data. A self-administered questionnaire will be used to collect data from the study participants. There will be given a free hand to complete it and return it.

Data Analysis:

Data analysis will be done by SPSS version 20. Statistical computer software for data analysis. This is a descriptive study and all the descriptive statistics will be obtained through the SPSS software

Including Criteria:

- ✓ Nurses of Gulab Devi Hospital Lahore
- ✓ Willing to participate
- ✓ Those who understands English

Excluding Criteria:

- ✓ Doctors of Gulab Devi Chest hospital Lahore
- ✓ Nurses other than Gulab Devi Chest hospital Lahore
- ✓ Ward Boy, Aya, Sweepers of Gulab Devi Chest hospital Lahore

Time Framework:

This study will approximately take 2-3 months.

Informed Consent:

Consents will be taken from all the participants and free hand will be given to the participants to take part in the study or refused to participate, participants will have also be the right to mentioned name or not.

Ethical consideration

Sufficient literature and information regarding research will be given to all the participants after taking full consent with help of full consent by a standard consent form with questionnaire, Confidentiality would also be considered an essential while taking to the participants.

RESULTS

Demographic Analysis

In the following the demographic analysis of the current study has given.

Gender

Table no.1 Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	14	12.2	12.2	12.2
	Female	101	87.8	87.8	100.0
	Total	115	100.0	100.0	

Table no.1 shows the results of frequency distribution of gender of the respondents. The results in table no.1 depicts that 14 (12.2%) of the respondents were male and 101 (87.8%) of the respondents were female.

Marital status

Table no.2 Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	64	55.7	55.7	55.7
	Single	51	44.3	44.3	100.0
	Total	115	100.0	100.0	

Table no.2 shows the results of frequency distribution of marital status of the respondents. The results in the table no.2 depicts that 64 (55.7%) of the respondents were married and 51 (44.3%) of the respondents were single.

Age group

Table no.3 Age group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	33	28.7	28.7	28.7
	25-35	51	44.3	44.3	73.0
	35-50	26	22.6	22.6	95.7
	Above50	5	4.3	4.3	100.0
	Total	115	100.0	100.0	

Table no.3 shows the results of frequency distribution of age group of the respondents. The results in table no.3 depicts that 33 (28.7) of the respondents were belongs to 18-25 age group ,51 (44.3%) of the respondents were belongs to 25-35 agegroup,26 (22.6%) 0f the respondents were belonging to 35-50 age group and 5 (4.3%) of the respondents were belongs to above 50 years age group.

Qualification

Table no.4 Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nursing diploma	115	100.0	100.0	100.0

Table no.4 shows the results of frequency distribution of qualification of the respondents. The results in table no.4 depicts that 115 (100%) of the respondents were qualified in nursing diploma.

Stay in organization

Table no.5: Stay in organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	lessthen1yr	8	7.0	7.0	7.0
	1.5yrs	47	40.9	40.9	47.8
	6-10yrs	25	21.7	21.7	69.6
	above10yrs	35	30.4	30.4	100.0
	Total	115	100.0	100.0	

Table no. 5 shows the results that 8(7%) of the respondents were having the experience of less than 1 year, 47(40.9%) of the study respondents were having the experience of 1.5 years, 25(21.7%) of the respondents were having the experience of 6-10 years and 35(30.4%) of the respondents were having the experience of more than 10 years.

Knowledge

Question # 1

Table no.6: TB is the most common opportunistic infection affecting PLWHA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	103	89.6	89.6	89.6
	No	12	10.4	10.4	100.0
	Total	115	100.0	100.0	

Table no.6 shows response of respondents about TB is the most common opportunistic infection affecting PLWHA. The results show that 103 (89.6%) of the respondents were agree and 12 (10.4%) of the respondents were not agree.

Question # 2

Table no. 7 HIV infection increases the risk of developing TB.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	101	87.8	87.8	87.8
	no	14	12.2	12.2	100.0
	Total	115	100.0	100.0	

Table no.7 shows response of respondents about HIV infection increase the risk of developing TB. The table no .7 depicts that 101 (87.8%) of the respondents were agree and 14 (12.2%) of the respondents were disagree.

Question # 3

Table no.8 There is no difference between TB infection and TB disease.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	56	48.7	48.7	48.7
	no	59	51.3	51.3	100.0
	Total	115	100.0	100.0	

Table no.8 shows response of respondents about **no difference between TB infection and TB disease**. The table no .8 depicts that 56 (48.7%) of the respondents were agree and 59 (51.3%) of the respondents were disagree.

Question # 4

Table no.9: A patient with suspected infectious TB should first be treated with broad-spectrum antibiotics before doing any investigations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	54	47.0	47.0	47.0
	no	61	53.0	53.0	100.0
	Total	115	100.0	100.0	

Table no.9: This frequency distribution shows that responses of the respondents about **A patient with suspected infectious TB should first be treated with broad-spectrum antibiotics before doing any investigations**. The result shows that 54(47%) 0f the respondents were agree and 61(53%) of that respondents were disagree.

Question # 5

Table no.9 The first step in assessing a TB suspect is to send for a chest X-ray

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	85	73.9	73.9	73.9
	no	30	26.1	26.1	100.0
	Total	115	100.0	100.0	

Table no.9 shows response of respondents about **the first step in assessing a TB suspect is to send for a chest X-ray**. The table no .9 depicts that 85 (73.9%) of the respondents were agree and 30 (26.1%) of the respondents were disagree.

Question # 6

Table no.10 Sputum smear microscopy for AFB (Acid Fast Bacilli) is the quickest and cheapest way of identifying infectious TB patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	100	87.0	87.0	87.0
	no	15	13.0	13.0	100.0
	Total	115	100.0	100.0	

Table no.10 shows response of respondents about **Sputum smear microscopy for AFB (Acid Fast Bacilli) is the quickest and cheapest way of identifying infectious TB patients. The** table no .10 depicts that 100 (87.0%) of the respondents were agree and 15 (13. o%) of the respondents were disagree.

Question # 7

Table no,11 All patients who have suspected infectious TB for the second time should have a sputum sent for culture and susceptibility testing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	104	90.4	90.4	90.4
	no	11	9.6	9.6	100.0
	Total	115	100.0	100.0	

Table no.11 describe the response of respondents about **All patients who have suspected infectious TB for the second time should have a sputum sent for culture and susceptibility testing.** The table no .11 depicts that 104 (90.4%) of the respondents were agree and 11 (9.6%) of the respondents were disagree

Question # 8

Table no.12. How is TB transmitted?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Droplet	105	91.3	91.3	91.3
	Utensils and shaking hands	10	8.7	8.7	100.0
	Total	115	100.0	100.0	

Table no.12: This frequency distribution shows that responses of the respondents about **How is TB transmitted?** The result shows that 105(91.3%) 0f the respondents were agree and 10(8.7%) of that respondents were disagree.

Question # 9

Table no 13: Covering the mouth when coughing has no effect on others

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	79	68.7	68.7	68.7
	no	36	31.3	31.3	100.0
	Total	115	100.0	100.0	

Table no.13: This frequency distribution shows that responses of the respondents about **Covering the mouth when coughing has no effect on others**. The result shows that 79(68.7%) 0f the respondents were agreeing and 36(31.3%) of that respondents were disagree.

Question # 10

Table no 14: TB is more likely to be transmitted on TB wards as opposed to out-patient departments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	98	85.2	85.2	85.2
	no	17	14.8	14.8	100.0
	Total	115	100.0	100.0	

Table no.14: This frequency distribution shows that responses of the respondents about **TB is more likely to be transmitted on TB wards as opposed to out-patient departments**. The result shows that 98 (85.2%) 0f the respondents were agreed and 17(14.8%) of that respondents were disagree.

Question # 11

Table no 15: Is ventilation important in the implementation of TB infection control?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	104	90.4	90.4	90.4
	no	11	9.6	9.6	100.0
	Total	115	100.0	100.0	

Table no.15: This frequency distribution shows that responses of the respondents about **Is ventilation important in the implementation of TB infection control?** The result shows that 104(90.4%) 0f the respondents were agreed and 11(9.6%) of that respondents were disagree.

Question # 12

Table no.16: A TB suspect should be placed in front of the queue in order to access services quickly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	93	80.9	80.9	80.9
	no	22	19.1	19.1	100.0
	Total	115	100.0	100.0	

Table no.16: This frequency distribution shows that responses of the respondents about **A TB suspect should be placed in front of the queue to access services quickly**. The result shows that 93(80.9%) 0f the respondents were agreed and 22(19.1%) of that respondents were disagree.

Question # 13

Table no.17: Surgical masks do not protect the wearer against TB infection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	64	55.7	55.7	55.7
	no	51	44.3	44.3	100.0
	Total	115	100.0	100.0	

Table no.17: This frequency distribution shows that responses of the respondents about **Surgical masks do not protect the wearer against TB infection. The** result shows that 64(55.7%) 0f the respondents were agree and 51(44.3%) of that respondents were disagree.

Question # 14

Table no.18: Sputum induction puts health workers at an increased risk of getting infected with TB

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	100	87.0	87.0	87.0
	no	13	11.3	11.3	98.3
	3	2	1.7	1.7	100.0
	Total	115	100.0	100.0	

Table no.18: This frequency distribution shows that responses of the respondents about **Sputum induction puts health workers at an increased risk of getting infected with TB** .The result shows that

100(87%) 0f the respondents were agree 13(11.3%) were disagree and 2(1.7%) of that respondents were invalid response.

Question # 15

Table no.19: Facilities leaders monitor and evaluate HWs on TBIC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	9	7.8	7.8	7.8
	sometime	32	27.8	27.8	35.7
	always	74	64.3	64.3	100.0
	Total	115	100.0	100.0	

Table no.19. This frequency distribution shows that responses of the respondents about **Facilities leaders monitor and evaluate HWs on TBIC**. The result shows that 9(7.8%) 0f the respondents were never done 32(27.8%) were sometime done and 74(64.3%) of that respondents were always done.

Question # 16

Table no.20: Follow TB treatment guideline to treat smear positive patients?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	2	1.7	1.7	1.7
	sometime	21	18.3	18.3	20.0
	always	92	80.0	80.0	100.0
	Total	115	100.0	100.0	

Table no.20: This frequency distribution shows that responses of the respondents about **Follow TB treatment guideline to treat smear positive patients?** The result shows that 2(1.7%) 0f the respondents were never done 21(18.3%) were sometime done and 92(80.0%) of that respondents were always done.

Question # 17

Table no.21: Opening window when TB suspected pts is in the room

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	5	4.3	4.3	4.3
	sometime	14	12.2	12.2	16.5
	always	96	83.5	83.5	100.0
	Total	115	100.0	100.0	

Table no.21: This frequency distribution shows that responses of the respondents about **Opening window when TB suspected pts is in the room**. The result shows that 5(4.3%) 0f the respondents were never done 14(12.2%) were sometime done and 96(83.5%) of that respondents were always done.

Question # 18

Table no .22: Using mask when approaching TB suspected patient.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	3	2.6	2.6	2.6
	sometime	12	10.4	10.4	13.0
	always	100	87.0	87.0	100.0
	Total	115	100.0	100.0	

Table no.22: This frequency distribution shows that responses of the respondents about **Using mask when approaching TB suspected patient.** The result shows that 3(2.6%) 0f the respondents were never done 12(10.4%) were sometime done and 100(87.0%) of that respondents were always done.

Question # 19

Table no.23: Giving priority patients coughing in waiting area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	21	18.3	18.3	18.3
	sometime	18	15.7	15.7	33.9
	always	76	66.1	66.1	100.0
	Total	115	100.0	100.0	

Table no.23: This frequency distribution shows that responses of the respondents about **Giving priority patients coughing in waiting area**. The result shows that 21(18.3%) 0f the respondents were never done 18(15.7%) were sometime done and 76(66.1%) of that respondents were always done.

Question # 20

Table no.24: Educating TB suspected pts how to cough and sneezing.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	2	1.7	1.7	1.7
	sometime	18	15.7	15.7	17.4
	always	95	82.6	82.6	100.0
	Total	115	100.0	100.0	

Table no.24. This frequency distribution shows that responses of the respondents about **Educating TB suspected pts how to cough and sneezing**. The result shows that 2(1.7%) 0f the respondents were never done 18(15.7%) were sometime done and 95(82.6%) of that respondents were always done.

Question # 21

Table no.25: Proper use of fan if available.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	5	4.3	4.3	4.3
	sometime	27	23.5	23.5	27.8
	always	83	72.2	72.2	100.0
	Total	115	100.0	100.0	

Table no.25 This frequency distribution shows that responses of the respondents about **Proper use of fan if available**. The result shows that 5(4.3%) 0f the respondents were never done 27(23.5%) were sometime done and 83(72.2%) of that respondents were always done.

Question # 22

Table no.26: Health worker screening for TB after contact with TB patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	11	9.6	9.6	9.6
	sometime	26	22.6	22.6	32.2
	always	78	67.8	67.8	100.0
	Total	115	100.0	100.0	

Table no.26 This frequency distribution shows that responses of the respondents about **Health worker screening for TB after contact with TB patients.** The result shows that 11(9.6%) 0f the respondents were never done 26(22.6%) were sometime done and 78(67.8%) of that respondents were always done.

Question # 23

Table no 27: Availability of designated sputum produced area for TB pts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	3	2.6	2.6	2.6
	sometime	20	17.4	17.4	20.0
	always	92	80.0	80.0	100.0
	Total	115	100.0	100.0	

Table no.27 This frequency distribution shows that responses of the respondents about **Availability of designated sputum produced area for TB patients**. The result shows that 3(2.6%) 0f the respondents were never done 20(17.4%) were sometime done and 92(80. %) of that respondents were always done.

Question # 24

Table no.28: Use AFB as diagnostic tools for TB suspected patient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	2	1.7	1.7	1.7
	sometime	16	13.9	13.9	15.7
	always	97	84.3	84.3	100.0
	Total	115	100.0	100.0	

Table no.28 This frequency distribution shows that responses of the respondents about **Use AFB as diagnostic tools for TB suspected patient**. The result shows that 2(1.7%) 0f the respondents were never done 16(13.9%) were sometime done and 97(84.3%) of that respondents were always done.

Question # 25

Table no .29: Observation check list

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	97	84.3	84.3	84.3
	no	18	15.7	15.7	100.0
	Total	115	100.0	100.0	

Table no.29: This frequency distribution shows that responses of the respondents about **Observation check list**. The result shows that 97 (84.3%) 0f the respondents were agree and 18(15.7%) of that respondents were disagree.

Question # 26

Table no .30: Check if mask is airtight and does not allow to enter air

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	8	7.0	7.0	7.0
	Sometime	19	16.5	16.5	23.5
	Always	88	76.5	76.5	100.0
	Total	115	100.0	100.0	

Table no.30 This frequency distribution shows that responses of the respondents about **Check if mask is airtight and does not allow to enter air**. The result shows that 8(7.0%) 0f the respondents were never done 19(16.5%) were sometime done and 88(76.5%) of that respondents were always done.

Question # 27

Table no.31: The room where participant work has cross-ventilated windows and doors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	8	7.0	7.0	7.0
	sometime	21	18.3	18.3	25.2
	always	86	74.8	74.8	100.0
	Total	115	100.0	100.0	

Table no.31 This frequency distribution shows that responses of the respondents about **the room where participant work has cross-ventilated windows and doors**. The result shows that 8(7.0%) 0f the respondents were never done 21(18.3%) were sometime done and 86(74.8%) of that respondents were always done.

Question # 28

Table no.32: Windows of the room of participant working was opened during data collection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	6	5.2	5.2	5.2
	sometime	20	17.4	17.4	22.6
	always	89	77.4	77.4	100.0
	Total	115	100.0	100.0	

Table no.32 This frequency distribution shows that responses of the respondents about **Windows of the room of participant working**

was opened during data collection. The result shows that 6(5.2%) 0f the respondents were never done 20(17.4%) were sometime done and 89(77.4%) of that respondents were always done.

Question # 29

Table no .33: Surgical mask was available for TB suspected patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	6	5.2	5.2	5.2
	sometime	21	18.3	18.3	23.5
	always	88	76.5	76.5	100.0
	Total	115	100.0	100.0	

Table no.33 This frequency distribution shows that responses of the respondents about **Surgical mask was available for TB suspected patients**. The result shows that 6(5.2%) 0f the respondents were never done 21(18.3%) were sometime done and 88(76.5%) of that respondents were always done.

Question # 30

Table no .34: Was there N95 mask available for HWs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	22	19.1	19.1	19.1
	sometime	17	14.8	14.8	33.9
	always	76	66.1	66.1	100.0
	Total	115	100.0	100.0	

Table no.34 This frequency distribution shows that responses of the respondents about. **Was there N95 mask available for HWs?** The result shows that 22(19.1%) 0f the respondents were never done 17(14.8%) were sometime done and 76(66.1%) of that respondents were always done.

Question # 31

Table no .35: Is there TB treatment guideline available?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	3	2.6	2.6	2.6
	sometime	22	19.1	19.1	21.7
	always	90	78.3	78.3	100.0
	Total	115	100.0	100.0	

Table no.35 This frequency distribution shows that responses of the respondents about **Is there TB treatment guideline available?** The result shows that 3(2.6%) 0f the respondents were never done 22(19.1%) were sometime done and 90(78.3%) of that respondents were always done.

Question # 32

Table no 36: Is there TB prevention poster posted?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	10	8.7	8.7	8.7
	sometime	25	21.7	21.7	30.4
	always	80	69.6	69.6	100.0
	Total	115	100.0	100.0	

Table no.36 This frequency distribution shows that responses of the respondents about **Is there TB prevention poster posted?** The result shows that 10(8.7%) 0f the respondents were never done 25(21.7%) were sometime done and 80(69.6%) of that respondents were always done.

Question # 33

Table no 37: Overall practice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	good practice	84	73.0	73.0	73.0
	poor practice	31	27.0	27.0	100.0
	Total	115	100.0	100.0	

Table no.37 This frequency distribution shows that responses of the respondents about **Overall practice.** The result shows that 84(73.0%) 0f the respondents were doing good practice and 31(27.0%) of the respondent were poor in practices.

DISCUSSION

The current study examines the knowledge and practices of the nurses of public hospitals regarding TB. Most of the current study participants were female and they were married. The current study has considered the reliable and valid instrument to analyze the level of health care workers' knowledge and practices regarding TB. The instrument consists of the key questions to measure the level of knowledge and practices of nurses and health care workers regarding TB. The results of these questions are discussed in the following.

This study results in table 6 show that most of the study participants knew that TB is a devious infection disease. Similarly, table 7 shows that majority of the nurses and health care staff have information about HIV infection which also enhances the risk of TB among the patients. Contrary to this, the results in table 8 emphasizes that majority of the respondents did not know about the difference between TB infection and TB disease.

The currents study also questioned that the nurses regarding the first step to assess the TB among the patients. The results in table 9 show that majority of the nurses knew that the first step to assess the TB among the patients should be through the chest X-ray. Similarly, majority of the nurses have knowledge that sputum smear microscopy for AFB (Acid Fast Bacilli) is the quickest and cheapest way of identifying infectious TB among the patients. Likewise, table 11 reveals that nurses were also agree that all patients who have suspected infectious TB for the second time, their sputum should have sent for culture and susceptibility testing.

Furthermore, the current study also examines the practices of the nurses regarding TB protocols. The respondents were analyzed regarding the practices protocols and results were satisfactory. The results in table 22 represents that most of the nurses and other health care workers use masks when interact with the TB patients to avoid the virus from the patients. Similarly, table no. 26 shows that majority of the nurses and other health care workers go through the screening after contacting with TB patients. The study results also show in table 24 that the nurses in the majority educate the TB patients regarding the ways to cough and sneeze.

In addition, table 29 noted that majority of the respondents were agree that they always ensure that either the observation check list is followed or not. Similarly, table 35 and table 37 reveal that majority of the respondents emphasizes that TB treatment guidelines were available and overall level of practices followed by nurses and other staff was quite good.

Therefore, the current study reveal that the nurses and other healthcare staff have sufficient knowledge and practice protocols are also fulfilled among the public hospitals of Lahore.

CONCLUSION

The current study examines the level of nurses' and health care staff's knowledge and practices regarding TB. The results reveal that majority of the nurses have good level of knowledge and following the practice protocols regarding TB. The researchers in future should emphasize on the comparison of the nurse's knowledge among the private and public hospitals of Pakistan.

Limitations

1- The current study only undertakes two public hospitals
2- The current study access only knowledge and practices of health care staff regarding TB
3- The current study does not analyze the factors which may effect on the knowledge and practices of nurses

Recommendations

1- Further studies should consider more hospitals to enhance the generalizability.
2- Researchers should emphasize on the factors which may affect and have association with health care staff knowledge and practices regarding TB.
3- The studies should also do comparison of the nurse's and staff's knowledge and practices among the public and private hospitals

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