



Perception of Nursing Students Toward Tuberculosis, in Khartoum, Sudan.

Badria A. Elfaki^{1*}, Hassanat E. Mustafa¹, Doaa A. Alshraf²

^{1*}Department of Nursing Practices, Umm Al-Qura University, Faculty of Nursing, Saudi Arabia, & Al -Neelain University, Khartoum, Sudan.

¹Department of Nursing Practices, Umm Al-Qura University, Faculty of Nursing, Saudi Arabia, & Al -Neelain University, Khartoum, Sudan.

²Staff Nurse, Sad Ub Al Alaa Hospital, BRN, RN, & MSc Student, Khartoum, Sudan

Abstract: *Nursing students expose to risk for acquiring infectious disease such tuberculosis during their hospitals activities and training. This study aim to assess undergraduate nursing students perception regard control and prevention tuberculosis. A quantitative descriptive study, conducted at faculty of nursing, in Khartoum, Sudan in 2016. Enrolled 276 nursing students of four educational levels, who fulfilled seclusion criteria. Probability sampling technique was adopted. Required data collected used self-administered structured questionnaire after pilot study, and then analyzed using (SPSS). Descriptive statistics, statistical comparing variables, ANOVA test were used, and Fisher and chi square tests with P-value < 0.05 were used to indicate the statistical significances. The study included 55(20.0%) male and 221(80.0%) female. While most of participants (69.0) in age groups of 18-22year, have first level of education and reflected a higher questionnaire respondent (30%). About (83%) of participants weren't know what is tuberculosis and (60%) weren't know the causative organism. Generally, participants showed fair level of perception regard tuberculosis, which was insignificantly high among female (p-values <0.005). Overall, mean total knowledge score 29.1993 ± 6.41647 SD. with 29.2624 ± 5.74091 SD. among female and 28.9455 ± 8.67824 SD. among male. There was no significance different among gender regard mean knowledge score (p-value= 0.744, and F test 0.107). While participants in age group of 18-22year have significance high level of total knowledge mean score; 29.8586 ± 6.38798 SD. (p-value= 0.035, and F test 3.397). The study concluded that nursing students have moderate level of precipitation about tuberculosis, this will enforce them to build extensive body of knowledge to promote their perception to fight against tuberculosis.*

Keywords: Knowledge, Nursing Students, Perception, Sudan , Tuberculosis.

INTRODUCTION

Tuberculosis (TB) is a disease most often affected the lungs, and other parts of the body; lymph nodes, the brain, kidneys, or bones and can cause serious

illness (EWHO, (2015), and caused by Mycobacterium tuberculosis bacteria. Worldwide, tuberculosis infects people more than any other infectious disease (Heartland National Tuberculosis Center (2011), and become one of the top 10



causes of death worldwide. In 2015, 10.4 million people fell ill with Tuberculosis and 1.8 million died from it including 0.4 million of people also infected with HIV. The largest number (61%) of these new TB cases occurred in Asia, followed by(26%) in Africa (World Health Organization Report (2016). Also in 2016, estimated that 10.4 million new tuberculosis cases or incident worldwide, of which 6.2 million were men, 3.2 million were women and 1 million were children (World Health Organization Report(2017). Tuberculosis find in every country majority of people sufferers from it live in low and middle income countries especially in regions such as Sub-Saharan Africa and South East Asia (Agyeman, A. A., and Ofori, R. A. (2017), and over 95% of tuberculosis deaths occur in these countries with low- and middle-income (World Health Organization Report (2016). About 11–15% of the tuberculosis burden in the Eastern Mediterranean Region (EMR) occur in Sudan (Elmadhoun, W.M. (2016). Because Sudan is an extremely turbulent country that has suffered from years of civil conflicts, including the North-- South and Darfur crises, which made expenditure toward health is low (Sara, A. H., et al. (2018). By 2020 an estimated 200 million of people would catch tuberculosis and there would be about 35 million deaths among them unless the infection rate is control. The situation is especially challenging in Asia, Middle East and Africa where there is a relatively high incidence of TB (Ahmed, M.M.,and Thanoon, T.M. (2012).

Tuberculosis mostly affects adults in productive age. However, all age groups are at risk (World Health Organization Report. 2016). Which possess greater threat to economic development; as over 90% of TB-

related deaths occur among adults in the most productive age (Agyeman, A. A., and Ofori, R. A. (2017). Tuberculosis is a potentially life-threatening disease that has the ability to spread quickly in the close confines of classrooms and dormitories on a college campus (Heartland National Tuberculosis Center (2011). Findings from the global context indicate that TB knowledge among undergraduate health care students is particularly important, because they may face significant exposure and, consequently have the highest risk of infection or disease. Moreover, these individuals represent potential future providers or leaders for prevention TB, so it is very serious to know how to control it appropriately (Montagna, M.T., et al. (2014). Tuberculosis treatment can take months up to two years to complete full treatment regimen (Scott, C., et al. (2015). So avoiding a tuberculosis outbreak should be a priority of all; health care providers, higher health education administrators and nursing students as staff trainee at hospitals and future providers (Heartland National Tuberculosis Center (2011).

The aim of the study:

To assess perception of nursing students regard tuberculosis control and prevention.

MATERIAL AND METHOD

A quantitative cross-sectional descriptive study. Was conducted at Al Neelain University, faculty of nursing, in Khartoum State, Sudan from May–August2016. Faculty of nursing Sciences established in 2002 as part of Faculty of Medicine and Health Sciences, and 8



patches were graduated awarded bachelor and diploma degree. In 2013, upgrading to Faculty of Nursing Sciences and become independent and offers a program of study leading to degrees of general Bachelor's, Master, and Ph.D. Population of the study was nursing students, included four educational levels; first, second, third, and four year and enrolled entire students nurses who were fulfilled the following criteria; student nurse, of both gender; male and female, at any age, and agree to participate. Probability sampling technique was adopted, sample size taken based on a pervious study (Sanusi, S.B., et al (2017). A total of 300 questionnaire was distributed randomly among faculty nursing students of four educational levels, and 276 questionnaire were retained back considers as sample size which was reflected as available sample size.

Variables of the study were socio-demographic factors; Age, sex, level of education and perception of nursing students toward tuberculosis related knowledge ; causative organism, mode of spread, risk factors, signs and symptoms, diagnosis, treatment, prevention , control and rehabilitation post tuberculosis infectious. Data was collected by standardized structured questionnaire (Fathalla, M.F. (2004) with closed –end questions which was composed of two sections; section one included socio-demographic data of respondents and section two included twelve questions about tuberculosis related knowledge. Data was collected by self-administered technique; questionnaires were distributed over all the faculty nursing student by data collector's team composed of researchers, and four qualified nurses. Pilot study was performed, questionnaire

was tested before used in twenty nursing students taken as five students of each educational level among same study area and population, using personal interview and students from whom questionnaire was tested were excluded from the survey. All the questionnaire questions were tested including content, wording, sequence, difficulty of question, format and layout. Then related to test outcome the questionnaire was needed some modifications and a few questions were adjusted to ensure reliability and accuracy of the questionnaire (Naresh, K. M, (2015).

Data was analyzed using Statistical Package for Social Science (SPSS) for windows version (20) after cleaned, pre-coded and pre-tested. Descriptive statistics was used and data was created in frequencies, percentages, and presented as tables and figures. Univariate analysis was done for single variables such as socio-demographic data, and bivariate analysis was carried out for two variables to find out it relation to each other such knowledge-related factor versus gender. Perception of respondents was analyzed based on knowledge score "Likert- type scale" (Losby, J., Wetmore, A (2012); modified into poor, fair(moderate), good and excellent score. Also chi-square and Fisher test were used to compare total knowledge variables among gender using ANOVA test and data summarized as mean and standard deviation (Fathalla, M.F (2004). In addition to statistical comparing of two sets of normally distributing data was performed by chi square test. P-value of less than 0.05 was considered to indicate a statistical significance. The study was approved by the ethical committee of Al-Neelain University; official agreement from dean of nursing collage was obtained and informed written consent



was taken from each respondents in the study.
RESULT

Table 1: Socio demographic characteristics of study participants.

Information		Frequency	Percentage
Gender	Male	55	20.0%
	Female	221	80.0%
	Total	276	100.0%
Age groups	18-22Year	191	69.0%
	23-27Year	76	28.0%
	28-35Year	9	3.0%
	Total	276	100.0%
Education levels	First year	84	30%
	Second year	71	26%
	Third year	57	21%
	Fourth year	64	23%
	Total	276	100.0%

Mean age $21.94 \pm (2.491 \text{ year})$, (M:F = 1:4)

Table 1: showed 55(20.0%) were male and 221(80.0%) were female; male to females ratio:1:4, more than half of participants 191(69.0) at age group between 18-22 year; age mean $21.94 \pm (2.491 \text{ year})$ and they were have first level of education (30%) followed by 26% second level, 23% fourth level and 21% students of the third level.

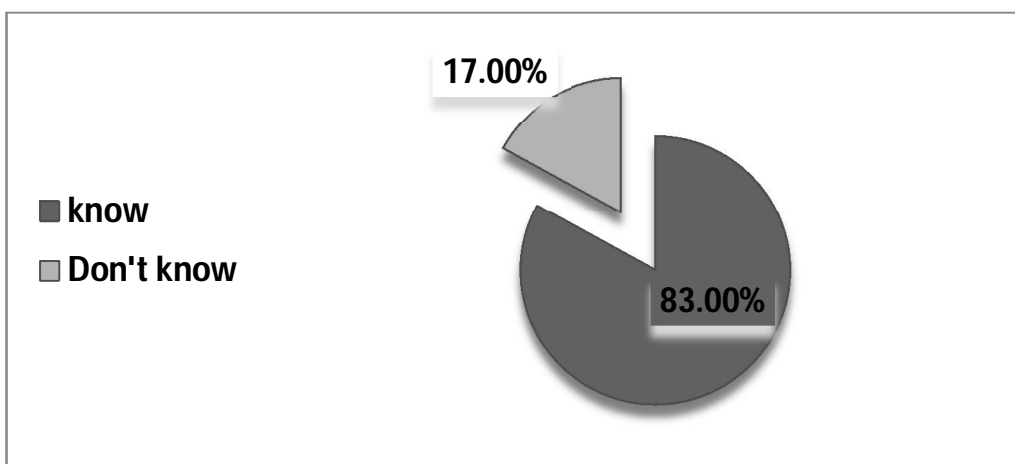


Fig. I: Perception of participants toward tuberculosis as a disease means.(n=276).

The figure showed about (83%) of participants didn't know what is tuberculosis as the disease means.

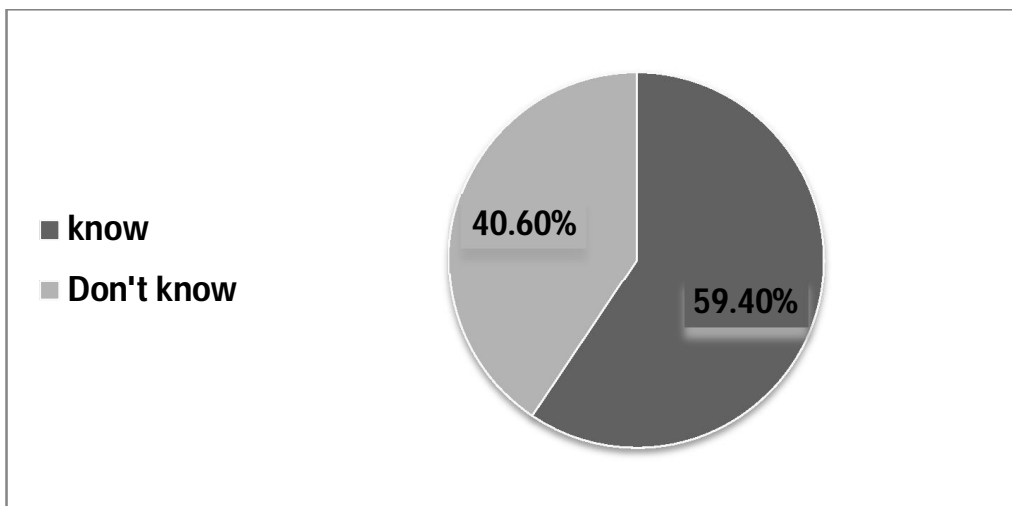


Fig. II: Perception of participants toward causative organism of tuberculosis.(n=276).

This graft showed (60%) of participants didn't know the causative organism of the tuberculosis.

Table 2: levels of perception among participants toward tuberculosis related knowledge.(n=276)

Items of knowledge	Level of knowledge				Total
	Poor	Fair	Good	Excellent	
Risk factors	13.4%	37.0%	33.3%	16.3%	100.0%
Mode of transmission	17.4%	40.6%	30.1%	12.0%	100.0%
Signs and symptoms	12.3%	38.4%	35.5%	13.8%	100.0%
Diagnosis	17.0%	44.6%	26.4%	12.0%	100.0%
First line treatment	17.8%	45.3%	25.7%	11.2%	100.0%
Second line treatment	29.0%	35.1%	25.0%	10.9%	100.0%
Methods of preventions	20.3%	35.5%	30.1%	14.1%	100.0%
Control of spreading	14.1%	36.2%	34.4%	15.2%	100.0%
Complications	21.0%	32.6%	25.7%	20.7%	100.0%
Health education	17.8%	31.5%	28.3%	22.5%	100.0%
Rehabilitation post disease	22.1%	36.6%	23.2%	18.1%	100.0%

In table 2, participants showed fair (moderate) level of perception regard risk factors, mode of transmission, signs and symptoms, diagnosis, treatment regimen , methods of preventions, control of spreading, complications, health education, and rehabilitation



post infection with tuberculosis, with percentages of 37.0%, 40.6%, 38.4%, 44.6%, 45.3%, 35.1%, 35.1%, 36.2%, 32.6%, 31.5%, and 36.6% respectively

Table 3: levels of perception among participants toward tuberculosis related knowledge in relation to their gender (n=276).

Items of Perception	Level of knowledge	Gender		Total	P-value
		Male	Female		
Mode of transmission	Poor	21.8%	16.3%	17.4%	.570
	Fair	32.7%	42.5%	40.6%	
	Good	32.7%	29.4%	30.1%	
	Excellent	12.7%	11.8%	12.0%	
	Total	100.0%	100.0%	100.0%	
First line of treatment	Poor	27.3%	15.4%	17.8%	.206
	Fair	41.8%	46.2%	45.3%	
	Good	20.0%	27.1%	25.7%	
	Excellent	10.9%	11.3%	11.2%	
	Total	100.0%	100.0%	100.0%	
Second line of treatment	Poor	30.9%	28.5%	29.0%	.623
	Fair	38.2%	34.4%	35.1%	
	Good	18.2%	26.7%	25.0%	
	Excellent	12.7%	10.4%	10.9%	
	Total	100.0%	100.0%	100.0%	
Methods of tuberculosis preventions	Poor	27.3%	18.6%	20.3	0.523
	Fair	30.9%	36.7%	35.5%	
	Good	27.3%	30.8%	30.1%	
	Excellent	14.5%	14.0%	14.1	
	Total	100.0%	100.0%	100.0%	
Control of tuberculosis spreading	Poor	16.4%	13.6%	14.1%	0.764
	Fair	38.2%	35.7%	36.2%	
	Good	34.5%	34.4%	35.0%	
	Excellent	10.9%	16.3%	15.2%	
	Total	100.0%	100.0%	100.0%	
Rehabilitation post tuberculosis	Poor	12.7%	19.0%	17.8%	0.581
	Fair	30.9%	31.7%	31.5%	
	Good	34.5%	26.7%	28.3%	
	Excellent	21.8%	22.6%	22.5%	
	Total	100.0%	100.0%	100.0%	

Table 3, showed male gender showed same level (32.7%) of fair good knowledge about mode of tuberculosis transmission in addition to, fair levels of knowledge

about first and second lines of treatment, methods of preventions, control of tuberculosis spreading, and rehabilitation post infected by tuberculosis with a



sequences results; (41.8%, 38.2%,38.2%, 30.9%, 38.2%, and 34.5%). While female showed fair(moderate) level of knowledge about mode of tuberculosis transmission, first and second lines of treatment, methods of tuberculosis preventions, control of tuberculosis spreading, and

rehabilitation post infected by tuberculosis as followed (42.5%,34.4%,36.7%,35.7%, and31.7%). Also the table showed females have a high insignificances levels of knowledge about tuberculosis (p-values <0.005).

Table 4: Total knowledge mean score among participants toward tuberculosis in relation to their gender and age groups (n=276).

Total Knowledge		N	Mean	Std. Deviation	df	F	p-value
Gender	Male	55	28.9455	8.67824	1	0.107	0.744
	Female	221	29.2624	5.74091			
	Total	276	29.1993	6.41647			
Age group	18-22Year	191	29.8586	6.38798	2	3.397	0.035
	23-27Year	76	27.6316	6.56017			
	28-35Year	9	28.4444	2.87711			
	Total	276	29.1993	6.41647			

In table 4, the total knowledge mean score of participants $29.1993 \pm (6.41647$ Std. Deviation) with 29.2624 ± 5.74091 SD. among females and 28.9455 ± 8.67824 SD. among males. This means there was no significance different of total knowledge mean score was observed among gender as reflected by p-value= 0.744, and F test 0.107. While participants at age group of 18-22year reflected a significance high level of total knowledge mean 29.8586 ± 6.38798 SD. as reflected by p-value= 0.035, and F test 3.397.

DISCUSSION

Poor socioeconomic status and lack of perceptions of tuberculosis symptoms and prevention consider as risk factors for acquiring it. In addition, to lack of knowledge, low risk perception and illness perceptions, and social stigma are poor access to treatment facilities and

adherence to prolong treatment regimen (Suleiman, M.A., et al.(2014).

The study enrolled 55(20.0%) male, and 221(80.0%) female; male to female ratio:1:4, more than half of participants at age group of 18-22year, their age mean 21.94 ± 2.491 years and they were have first level of education, and appeared as higher respondents (Table:1). This was similar to result by study done in Iraq which found female was more greater than male, and most of participants aged between 20-22 years (Ahmed, M.M., and Thanoon, T.M (2012). And disagree with a study in Malaysia,2017 reported that male was greater than female, but it similar in that a higher study respondent's among students with first level of education (Sanusi, S.B., et al (2017)).

Regard perceptions of respondents toward tuberculosis, (83%) didn't know exactly what is tuberculosis as infectious disease, and about sixty percent didn't



know the causative organism (Fig. I and Fig. II). This result was less than that found by study conducted among undergraduate students to assess their knowledge about tuberculosis (93%) of participants answer tuberculosis is caused by Mycobacterium tuberculosis (Montagna, M.T., et al. (2014). Their answered was true as mention by a literature; tuberculosis is infectious disease caused by Mycobacterium tuberculosis and several factors will increase the risk of infectious with it, including gastrectomy, uncontrolled diabetes mellitus, Hodgkin's disease, leukemia, treatment with corticosteroid therapy, immunosuppressant therapy and human immunodeficiency virus infection (Burghardt, J.C (2012).

Generally, study participants showed fair(moderate) level of perceptions regard risk factors, mode of transmission, signs and symptoms, diagnosis, treatment, methods of preventions, control of spreading, complications, health education, and rehabilitation post infection with tuberculosis disease (Table.2). With contrast to gender the study showed female have insignificances high perception about tuberculosis; p-values <0.005 (Table. 3). These was disagree with previous study reported that overall have good knowledge score about tuberculosis cases, method of transmission, symptoms, and treatment, and other study in Portugal found the nursing students reached the higher scores about general knowledge towered tuberculosis (Ahmed, M.M.,and Thanoon, T.M (2012). These result was similar to find by a study in Malaysia,2017 reported that awareness among students about tuberculosis was fair. Enhancing the awareness among community is one of the strategy outlined by World Health Organization (WHO) in

the Global Plan to Stop TB 2006-2015 program (Sanusi, S.B., et al (2017).

Overall, total knowledge mean score of respondents was 29.1993 ± 6.41647 SD. with no significance different among gender p-value= 0.744, and F test 0.107. While respondents at age group of 18-22year reflected significance high level of total knowledge mean score 29.8586 ± 6.38798 SD. P-value= 0.035, and test 3.397 (Table. 3). The study reflected high mean score among respondents than that documented by study at University of Namibia 2013 (Ojulong, J., et al. (2013).

Tuberculosis is curable and preventable infectious disease. But it is spread from person to person through the air (World Health Organization Report(2016) or by inhalation of droplet nuclei when infected persons cough or sneeze (Burghardt, J.C . (2012)and (Smeltzer SC and Bare BG(2012); it can be spreading easy widely from person to person . So the nurse have a major role for prevention through instructs the person or patient about the important of hygiene measures, including mouth care, covering mouth and nose when coughing and sneezing, proper disposal of tissues, and proper hand washing Smeltzer SC and Bare BG(2012). On the other hand, for promoting awareness or perceptions of tuberculosis control program in place such as faculty a campus is also helpful in protecting from other respiratory diseases (Heartland National Tuberculosis Center (2011). However, tuberculosis infection control is a combination of measures aimed to minimize the risk of transmission within populations and gaps in implementation practice predispose health professionals to



nosocomial tuberculosis transmission
Temesgen, C., and Demissie, M.
(2014).

CONCLUSION AND RECOMNIDATIONS

Study reflected that participants have moderate level of perceptions about tuberculosis related knowledge which was insignificantly high among females. promoting perceptions of tuberculosis prevention and control program in faculty campus is helpful in protecting from tuberculosis and other respiratory diseases. In addition to mandatory strength perceptions about tuberculosis preventive measures for all personals whether an employee or student. Finally, training of students to practice tuberculosis preventive measures will be prograded, implemented and documented prior to potential tuberculosis exposure.

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