Vol. 7 No. 6 Juni 2019 - September 2019

MEDICINUS

JURNAL KEDOKTERAN
UNIVERSITAS PELITA HARAPAN

Diterbitkan oleh Fakultas Kedokteran, Universitas Pelita Harapan, Indonesia
ISSN 1978 - 3094
E ISSN 2622 - 6995

MEDICINUS

Journal of Faculty of Medicine
University of Pelita Harapan

Vol. 7 No. 6
June 2019 – September 2019
ISSN 1978-3094
E-ISSN 2622-6995

Clinical Article

Case Report

Publish: June 2020

Address

FK-UPH Building 2nd floor
Boulevard Jendral Sudirman
Lippo Karawaci, Tangerang
phone (021) 54210130-54210131
e-mail:
medicinus.fk@uph.edu

Publish

February – June – October

Risk Factors of Non-typhoidal Salmonella Bacteremia versus Typhoidal Salmonella Bacteremia in Patients from a General Hospital in Karawaci, Tangerang, Indonesia: a five-year Review

Nata Pratama Hardjo Lugito[1], Cucunawangsih[2], Andree Kurniawan[1], Dewi Purnamasari[3]

[1]*Department of Internal Medicine, Faculty of Medicine, University of Pelita Harapan, Siloam Hospital Lippo Village*
[2]*Department of Microbiology, Faculty of Medicine, University of Pelita Harapan, Siloam Hospital Lippo Village*
[3]*Resident Medical Officer at Siloam Hospital Lippo Village*

Citation : Lugito NPH, Cucunawangsih, Kurniawan A, Purnamasari D. Risk Factors of Non-typhoidal Salmonella Bacteremia versus Typhoidal Salmonella Bacteremia in Patients from a General Hospital in Karawaci, Tangerang, Indonesia: a five-year Review Medicinus. 2019 June; 7(6):162–169
Keywords: Non-typhoidal salmonella; typhoidal salmonella; bacteremia; antimicrobial susceptibility
***Correspondance :** Nata P.H Lugito, Department of Internal Medicine, University of Pelita Harapan, Siloam Hospitals Lippo Village
E-mail : nata.lugito@uph.edu
Online First : June 2020

Abstract

Salmonella infections including Non-typhoidal Salmonella (NTS) and enteric fever are important global public health problem, causing approximately 94 million human cases of gastroenteritis with 150,000 deaths annually around the globe. The aim of this study was to determine risk factors for NTS bacteremia patients compared to Typhoidal patients in Indonesia, area with high incidence of enteric fever. This retrospective descriptive study was conducted in Siloam Hospital in Karawaci, Indonesia, from January 2011 to December 2015. Logistic regression model was used to determine independent predictors of NTS bacteremia including demographic and epidemiologic characteristics, clinical presentations, and laboratory results. Out of 129 positive isolates for Salmonella with complete medical records, 18 (13.9%) were positive for NTS. Patients with NTS bacteremia were more likely to belong in the age group below 5 or above 60 year-old, more frequent to have anemia and abnormal leucocyte count. The susceptibility patterns against antimicrobial of NTS bacteremia and Typhoidal bacteremia were similar. In logistic regression analysis, age below 5 or above 60 year-old, hemoglobin level below 12 g/dL and leucocyte count below 4,000/µL or above 12,000/µL were independent risk factors for NTS bacteremia.

Introduction

Salmonella infections are important public health problem worldwide, particularly in developing countries, where they are the leading cause of morbidity and mortality.[1] In many regions Salmonella surveillance data is limited, but in South East Asia, it is estimated that there are approximately 22.8 million cases with 37,600 deaths annually.[2] Non-typhoidal Salmonella (NTS) is a group of *Salmonella enterica* spp. except for *S. enterica* serovar Typhi, Paratyphi A, Paratyphi B, and Paratyphi C. Out of 2500 serovars of *Salmonella enterica* that have been identified, human cases of NTS infection are caused by a limited number of serovars.[3] In humans, NTS it is estimated that there are approximately 94 million cases of gastroenteritis with 150,000 deaths annually.[2] In Africa, NTS infection was one of the major causes of bacteremia, especially in children and immunocompromised hosts such as HIV and malaria individuals.[4] On the other hand, NTS infection in Asia is estimated to be much lower than in Africa. A surveillance study found only 6 cases of invasive NTS out of more than 20,000 blood cultures.[5] In the settings of high incidence of *S. enterica* serovar Typhi infection in Indonesia, comparison between NTS bacteremia with Typhoidal bacteremia is important in diagnosing and managing both infection. The aim of this study was to compare demographic characteristics, epidemiologic characteristics including comorbidities, clinical presentations, laboratory results, and sensitivity pattern against antimicrobials of NTS bacteremia patients and of Typhoidal bacteremia patients admitted to a general hospital in Karawaci, Tangerang, Banten, Indonesia during the period of 2011-2015.

Materials and Methods

Study setting

This retrospective descriptive study was conducted in Siloam Hospital in Karawaci, Tangerang, Banten, Indonesia, which is a private teaching hospital affiliated to Faculty of Medicine, Pelita Harapan University. All patients admitted to the hospital from January 2011 to December 2015 with blood culture positive for Salmonella spp. were considered eligible. All patients were grouped as (1) NTS bacteremia group, which had positive blood culture for Salmonella spp. other than *S. typhi* and *S. paratyphi*, and (2) Typhoidal bacteremia group, which had positive blood culture for *S. typhi* and *S. paratyphi* as control group. Demographic characteristics (age and sex), and epidemiologic characteristics including comorbidities (diabetes mellitus and pneumonia), clinical presentations (fever, body temperature, pulse, diarrhea), laboratory results (hemoglobin, leucocyte, neutrophil, lymphocyte, eosinophil, platelet, and sensitivity pattern against antimicrobials) were collected from medical records. Fever was defined as axillary temperature above 37.8°C. Diarrhea was defined as loose or watery stools at least three times per day, or more frequently than normal for an individual.[6] Clinical sepsis was defined as presence or suspected presence of infection, with any two of the following (1) hypo- (below 35.0°C) or hyperthermia (above 38.5°C), (2) abnormal age-adjusted leucocyte count below 4,000/µL, aboce 12,000/µL or above 10% bands, (3) tachycardia (defined as pulse rate above the upper normal limit according to age), (4) tachypnea (defined as respiratory rate above the upper normal limit according to age), and (5) abnormal cognition.[7]

Specimen, culture and identification

Venous blood collected from patients was inoculated into enriched soybean-casein digest broth with resins in BACTEC aerobic plus/F (Becton-Dickinson, New Jersey, USA) bottles. For patients with body weight less than 12.8 kg of weight, BACTEC Peds Plus/F bottles were used. When there was bacterial growth indicated by the BACTEC machine, blood culture bottles were sub-cultured onto a MacConkey agar plate.

Susceptibility testing

Susceptibility of *Salmonella* isolates against antimicrobials were detected using agar dilution method according to the guidelines of the Clinical and Laboratory Standards Institute (CLSI). Minimal inhibitory concentrations (MICs) for each antibiotic was determined by VITEK 2 compact (bioMérieux, Marcy l'Etoile, France). Susceptibility interpretations were based on CLSI M100-S23 clinical breakpoints.[8] The antibiotics used included carbapenems (meropenem, imipenem, ertapenem), penicillins (ampicillin, amoxicillin, amoxicillin clavulanate), cephalosporins (ceftriaxone, cefotaxime, cephtazidime), piperacilin tazobactam, fluoroquinolones (ciprofloxacin and levofloxacin), trimethoprime sulphamethoxazole, aminoglycosides (amikacin and gentamicin), and tigecycline. Results were included in the analysis only when the corresponding QC isolates tested were within the acceptable range according to CLSI guidelines. Chloramphenicol susceptibility for *Salmonella* was not tested according to the policy of the Indonesian Microbiology Association.

Statistics

The data were analyzed statistically using Statistical Package for Social Sciences (SPSS, version 24.0.0.0). Continous data were presented as mean $\pm$ SD or median (range), while categorical data as frequency (percentage). The student's t-test was used to compare groups of continuous data with normal distribution and the Mann-Whitney U test for groups of non-parametric data. Fisher's exact test was used was used to compare groups of categorical data when the expected cell value of 2 x 2 table was less than 5, and for all other cases Chi Squared test was used. Comparison between NTS and Typhoidal bacteremia group to determine independent predictors of NTS bacteremia using logistic regression model included demographic and epidemiologic characteristics, clinical presentations, and laboratory results variables with $p \leq 0.05$ from the univariate analysis.

Ethical considerations

This study was approved by the Research Review Committees of the Siloam General Hospital.

Results

In the period January 2011 to December 2015, a total of 1,679 positive blood cultures were collected from patients admitted to the Siloam Hospital in Karawaci, Tangerang, Banten, Indonesia. Of these, 29 were positive for NTS, 168 for *S. typhi* and *S. paratyphi* A. Out of these figures, 11 NTS, 57 *S. typhi* and *S. paratyphi A* patients were excluded due to unavailability of complete data in the medical records. None of the patients with NTS and Typhoidal bacteremia died in the period of admission due to infection or other causes. NTS bacteremia patients were more likely to be older and have lower mean hemoglobin level. Compared to patients with Typhoidal bacteremia, the patients with NTS bacteremia were more likely to belong in the age group below 5 year-old or above 60 year-old, and more frequent to have anemia and abnormal leucocyte count (Table 1). In logistic regression analysis, after adjusting for potential confounders, age group below 5 year-old or above 60 year-old, anemia, and abnormal leucocyte count were independent risk factors for NTS bacteremia (Table 2). The susceptibility patterns against antimicrobial of NTS bacteremia and Typhoidal bacteremia were similar (Table 3). The NTS bacteremia and Typhoidal bacteremia group had high susceptibility rate to most antimicrobials and high resistancy rate against amikacin and gentamicin.

Discussion

Invasive NTS infections causes significant morbidity and mortality worldwide, particularly associated with HIV, malnutrition, and malaria in sub-Saharan Africa. This study described the epidemiological and clinical characteristics along with laboratory results and antimicrobial susceptibility pattern of patients presenting with invasive NTS to a general hospital in Karawaci, Tangerang, Banten, Indonesia where HIV, malnutrition, and malaria rates were low.

This study found that NTS bacteremia occurance was low, and no patients with NTS bacteremia and Typhoidal bacteremia died during hospital admission. NTS bacteremia is uncommon finding at Siloam Hospital, accounted for approximately 0.3% of positive blood cultures, compared to *S. typhi* which accounted for 1.7% of all positive blood cultures. A systematic review has identified *S. typhi* as the most common community acquired blood stream infection in South and Southeast Asia among both adults and children.[9] Studies in Asia and Africa found that NTS incidence ranged from 1.8 – 7.2 per 100,000 populations in Asia[5] compared to 175 – 388 per 100,000 populations in Africa.[10-12] No fatalities occurred in patients with NTS and Typhoidal bacteremia died during admission of this study, in contrast with studies in China,[4] Bangladesh,[13] Sub-Saharan Africa,[14] and Vietnam[15] that found high fatality rate, ranged between 19.7% - 26%.

According to age distribution, 16.7% and 27.8% of patients with NTS bacteremia were infants and elderly, in contrast with Typhoidal bacteremia which found only 5.4% and 1.8% of patients were infants and elderly (p = 0.000). Studies have shown that infants and elderly were age groups known to be of highest risk for invasive NTS.[5,7] Previous studies have reported differences in age distribution of patients with NTS and Typhoidal bacteremia.[5,16]

Studies have shown NTS bacteremia to be more often invasive in immunocompromised patients than the healthy patients,[17] and cytokines played important role in the susceptibility to NTS infection compared to Typhoidal bacteremia.[18] Studies from South Asia and Africa suggested that malnutrition was a risk factor for NTS bacteremia compared with non-Salmonella bacteremia.[19] Other study confirmed that malnutrition as risk factor remains when compared to age-matched Typhoidal bacteremia patients.[13] It is hypothesized that malnutrition renders to immunocompromised state which was a predisposing factor for NTS bacteremia compared to Typhoidal bacteremia. Other condition that could contribute to immunocompromised state is chronic disease such as diabetes mellitus. In this study, no patient suffered from malnutrition. Proportion of diabetes in NTS and Typhoidal bacteremia patients was not significantly different.

A study found that higher proportion of NTS bacteremia patients had clinical signs of sepsis, acute kidney injury, and abnormal leucocyte count compared to Typhoidal bacteremia, which indicated more severe presentation.[13] This study showed that median pulse rate, temperature, and leucocyte count of NTS

bacteremia patients did not differ significantly compared to Typhoidal bacteremia patients, although proportion of NTS bacteremia patients with leucocyte count below 4,000/µL or above 12,000/µL of was significantly higher compared to Typhoidal bacteremia patients. As clinical sepsis is the sum of the above variables, it could be predicted that proportion of NTS bacteremia patients with clinical signs of sepsis did not differ significantly compared to Typhoidal bacteremia patients.

Duration of fever and duration of diarrhea were not significantly different between NTS and Typhoidal bacteremia patients, which was in line with previous studies.[13,20,21] A review article stated that NTS bacteremia disease presentation closely resembles Typhoidal bacteremia, in that patients had high fever, hepatosplenomegaly and respiratory complications.[22]

Patients with NTS bacteremia had significantly lower mean hemoglobin level than Typhoidal patients. This is in contrast to findings of a study in Bangladesh,[13] which found lower hemoglobin level in Typhoidal patients, as hematological changes in typhoid fever were caused by bone marrow suppression and hemophagocytosis.[23] The possible explanation for the higher proportion of anemia in this study would be the acute blood loss, especially in the gastrointestinal tract. Acute blood loss in the gastrointestinal tract could not be proven, because lack of data on feces analysis.

The susceptibility pattern of blood NTS isolates in this study shown high susceptibility against most antimicrobials except amikacin and gentamicin. The pattern is quite similar to a study in South East Asian countries, including Indonesia that found no resistance against ciprofloxacin and ceftriaxone.[24] The difference to the South East Asian study was resistance against sulphametoxazole of 9.0% while in this study it was 5.6%. Other study in South Asia found NTS isolates resistantance rate against ceftriaxone was 5.0%, trimethoprim sulphametoxazole was 10.0% and no resistance against ciprofloxacin was.[13] The situation was quite different in Africa where resistance rate were high, including against amoxicillin 55.6%, amoxicillin clavulanat 22.2%, trimethoprim sulphametoxazole 31.8%, ciprofloxacin 30.4%.[25] Susceptibility pattern of Typhoidal isolates in this study was similar to NTS isolates, in contrast to other study which found different susceptibility pattern between NTS and Typhoidal isolates. [13]

There were several limitations of this study. The samples of this study were blood of patients admitted to the hospital, so the suspectibility pattern of *Salmonella* spp. representing the hospital and not the entire population of Banten province or Indonesia. The unavailability of data on chloramphenicol susceptibility because of the policy of the Indonesian Microbiology Association not to test chloramphenicol for *Salmonella* spp. anymore. Other antimicrobial not tested was nalidixic acid. In vitro nalidixic acid is more appropriate to test for in vivo fluoroquinolone resistance. The study used medical records to collect epidemiological, clinical characteristics, and laboratory results according to the retrospective nature of the design, thus data of some variables were missing due to incomplete medical records. Despite these limitations, this study is the first to analyze NTS bacteremia in Indonesia.

In conclusion, the study at a general hospital in Karawaci, Tangerang, Banten, Indonesia found age below 5 year-old and above 60 year-old, hemoglobin level below 12 g/dL and leucocyte count below 4,000/µL or above 12,000/µL were independent risk factors for NTS bacteremia. The high susceptibility pattern against antimicrobials of NTS isolates was similar to Typhoidal isolates. Further investigation is needed to describe epidemiology and antimicrobial susceptibility pattern of invasive NTS infections in Indonesia.

Competing Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

Acknowledgements

The authors wish to acknowledge of all staffs of Siloam Hospital, Karawaci, Tangerang, Banten, Indonesia including nurses, resident medical officers, microbiology laboratory staffs for their assistance in this study.

References

1. Bisi-JohnsonMA, Obi CL. Escherichia coli and Salmonella species: molecular landscape and therapeutic considerations: a review. Adv Med Sci 2012; 1(1): 1–16.

2. Majowicz SE, Musto J, Scallan E, Angulo FJ, Kirk M, O'Brien SJ, et.al. The global burden of nontyphoidal Salmonella gastroenteritis. Clinical Infectious Diseases 2010; 50: 882–9. doi: 10.1086/650733 PMID:20158401

3. Hendriksen RS, Vieira AR, Karlsmose S, Lo Fo Wong DM, Jensen AB, Wegener HC, et.al. Global monitoring of Salmonella serovar distribution from the world health organization global foodborne infections network country data bank: results of quality assured laboratories from 2001 to 2007. Foodborne Pathogens and Disease 2011; 8: 887–900.

4. Lan NPH, Phuong TLT, Huu HN, Thuy L, Mather AE, Park SE, et.al. Invasive Non-typhoidal Salmonella Infections in Asia: Clinical Observations, Disease Outcome and Dominant Serovars from an Infectious Disease Hospital in Vietnam. PLoS Negl Trop Dis 2016; 10(8): e0004857. doi:10.1371/journal.pntd.0004857

5. Khan MI, Ochiai RL, von Seidlein L, Dong B, Bhattacharya SK, Agtini MD, et.al. Non-typhoidal Salmonella rates in febrile children at sites in five Asian countries. Tropical Medicine and International Health 2010; 15(8): 960–3. doi:10.1111/j.1365-3156.2010.02553.x

6. Riddle MS, DuPont HL, Connor BA. ACG Clinical Guideline: Diagnosis, Treatment, and Prevention of Acute Diarrheal Infections in Adults*. Am J Gastroenterol* 2016; 30: 1-21. doi: 10.1038/ajg.2016.126

7. Chisti M, Duke T, Robertson C, Ahmed T, Faruque A, Bardhan PK, et.al. Co-Morbidity: Exploring The Clinical Overlap Between Pneumonia and diarrhoea in a hospital in Dhaka, Bangladesh. Annals of tropical paediatrics 2011; 31: 311–9. doi: 10.1179/1465328111Y.0000000033 PMID: 22041465

8. Clinical and Laboratory Standards Institute. Performance standards for antimicrobial susceptibility testing. 23rd Informational Supplement. Wayne, PA: Clinical and Laboratory Standards Institute; 2013. p. M100-S23.

9. Deen J, von Seidlein L, Andersen F, Elle N, White NJ, Lubell Y. Community-acquired bacterial bloodstream infections in developing countries in south and southeast Asia: a systematic review. Lancet Infect Dis 2012; 12: 480–7. doi: 10.1016/S1473-3099(12)70028-2 PMID: 22632186

10. Berkley JA, Lowe BS, Mwangi I, Williams T, Bauni E,Mwarumba S, Ngetsa C, et.al. Bacteremia among children admitted to a rural hospital in Kenya. New England Journal of Medicine 2005; 352: 39–47.

11. Enwere G, Biney E, Cheung YB, Zaman Syed MA, Okoko B, Oluwalana C, et.al. Epidemiologic and clinical characteristics of community-acquired invasive bacterial infections in children Aged 2–29 months in the Gambia. Pediatric Infectious Disease Journal 2006; 25: 700–5.

12. Sigauque B, Roca A, Mandomando I, Morais L, Quintó L, Sacarlal J, et.al. Community acquired bacteremia among children admitted to a rural hospital in Mozambique. Pediatric Infectious Disease Journal 2009; 28: 108–13.

13. Shahunja KM, Leung DT, Ahmed T, Bardhan TK, Ahmed D, Qadri F, et.al. Factors Associated with Non-typhoidal Salmonella Bacteremia versus Typhoidal Salmonella Bacteremia in Patients Presenting for Care in an Urban Diarrheal Disease Hospital in Bangladesh. PLoS Negl Trop Dis 2015; 9(9): e0004066. doi:10.1371/journal.pntd.0004066

14. Gordon MA, Graham SM, Walsh AL, Wilson L, Phiri A, Molyneux E, et.al. Epidemics of invasive Salmonella enterica serovar enteritidis and S. enterica Serovar typhimurium infection associated with multidrug resistance among adults and children in Malawi. Clin Infect Dis 2008; 46: 963–9. doi: 10.1086/529146 PMID: 18444810

15. Yen YF, Wang FD, Chiou CS, Chen YY, Lin ML, Chen TL, et.al. Prognostic Factors and Clinical Features of Non-typhoid Salmonella Bacteremia in Adults. J Chin Med Assoc 2009; 72(8): 408–13

16. Feasey NA, Archer BN, Heyderman RS, Sooka A, Dennis B, Gordon MA, et.al. Typhoid fever and invasive nontyphoid salmonellosis, Malawi and South Africa. Emerging infectious diseases 2010; 16: 1448. doi: 10.3201/eid1609.100125 PMID: 20735930

17. Galanakis E, Bitsori M, Maraki S, Giannakopoulou C, Samonis G, Tselentis Y. Invasive non-typhoidal salmonellosis in immunocompetent infants and children. International journal of infectious diseases 2007; 11: 36–9. PMID: 16564718

18. Pin C, Hansen T, Munoz-Cuevas M, de Jonge R, Rosenkrantz JT, Löfström C,et.al. The transcriptional heat shock response of Salmonella typhimurium shows hysteresis and heated cells show increased resistance to heat and acid stress. PLoS One 2012; 7: e51196. doi: 10.1371/journal.pone.0051196 PMID: 23236453

19. Mandomando I, Macete E, Sigauque B, Morais L, Quinto L, Sacarlal J, et.al. Invasive non-typhoidal Salmonella in Mozambican children. Trop Med Int Health 2009; 14: 1467–74. doi: 10.1111/j.1365-3156.2009.02399.x PMID: 19793081

20. Tsai MH, Huang YC, Chiu CH, Yen MH, Chang LY, Lin PY, et.al. Nontyphoidal Salmonella bacteremia in previously healthy children: analysis of 199 episodes. Pediatr Infect Dis J 2007; 26: 909–13. PMID:17901796

21. Khanam F, Sayeed MA, Choudhury FK, Sheikh A, Ahmed D, Goswami D, et.al. Typhoid fever in young children in Bangladesh: clinical findings, antibiotic susceptibility pattern and immune responses. PLoS Negl Trop Dis 2015; 9: e0003619. doi:10.1371/journal.pntd.0003619 PMID: 25849611

22. Gal-Mor O, Boyle EC, Grassi GA. Same species, different diseases: how and why typhoidal and non-typhoidal *Salmonella enterica* differ. Frontiers in Microbiology 2014; 5 (391): 1-10.

23. Khosla SN, Anand A, Singh U, Khosla A. Haematological profile in typhoid fever. Trop Doct 1995; 25: 156–8. PMID: 7502322

24. Van TTH, Nguyen HNK, Smooker PM, Coloe PJ. The antibiotic resistance characteristics of non-typhoidal Salmonella enterica isolated from food-producing animals, retail meat and humans in South East Asia. International Journal of Food Microbiology 2012; 154: 98–106. doi:10.1016/j.ijfoodmicro.2011.12.032

25. Smith SI, Seriki A, Ajayi A. Typhoidal and non-typhoidal Salmonella infections in Africa. Eur J Clin Microbiol Infect Dis 2016; 35: 1913–22 DOI 10.1007/s10096-016-2760-2763

Table 1. Demographic, clinical and laboratory characteristics of NTS bacteremia vs Typhoidal bacteremia

Variables	Non-typhoidal Salmonella Bacteremia (n=18)	Typhoidal bacteremia (n=111)	OR	95% CI	*p* value
Sex					
Male	9 (50.0%)	65 (58.6%)			
Female	9 (50.0%)	46 (41.4%)	0.71	0.26 – 1.92	0.671
Age	34 (1 – 77)	18 (4 – 80)			0.035*
Age group					
< 5 y.o	3 (16.7%)	6 (5.4%)			
5 – 60 y.o	10 (55.6%)	103 (92.8%)			0.000*
> 60 y.o	5 (27.8%)	2 (1.8%)			
Fever	15 (83.3%)	109 (98.2%)	0.09	0.01 – 0.59	0.019*
Duration of fever	1.5 (0 – 21)	5.0 (0 – 30)			0.111
Duration of fever ≥ 7 days	12 (66.7%)	68 (61.3%)	0.79	0.28 – 2.26	0.860
Duration of diarrhea ≥ 7 days	8 (44.4%)	37 (33.3%)	1.60	0.58 – 4.39	0.515
Pulse rate	90 (76 – 130)	90 (50 – 150)			0.362
Temperature	37.3 (36.0 – 38.5)	37.8 (35.8 – 40.2)			0.887
Hemoglobin	11.7 (1.96)	13.1 (1.73)			0.004*
Leucocyte	8,170 (3,250 – 23,730)	6,330 (1,910 – 81,160)			0.091
Neutrophil	60 (2 – 85)	61 (3 – 90)			0.174
Lymphocyte	24 (6 – 61)	25 (0 – 50)			0.968
Eosinophil	0.3 (0 – 2)	0.0 (0 – 5)			0.102
Platelet	189,295.5 (99,750,52)	207,380.27 (76,619.32)			0.471
Hemoblobin < 12.0 g/dL	9 (50.0%)	24 (21.6%)	3.63	1.29 – 10.14	0.018*
Leucocyte < 4,000/µL or > 12,000/ µL	9 (50.0%)	12 (10.8%)	0.89	0.27 – 2.93	0.000*
Clinical sepsis	4 (22.2%)	27 (24.3%)	1.57	0.17 – 14.93	1.000
Comorbidities					
Diabetes Mellitus	1 (5.6%)	4 (3.6%)	2.02	0.49 – 8.19	0.534
Pneumonia	3 (16.7%)	10 (9.0%)	8.25	2.74 – 24.81	0.391

Table 1. Logistic regression of NTS bacteremia vs. Salmonella typhi bacteremia

Variables	OR	95% CI	*p* value
Age group			0.004
< 5 y.o.	3.11	0.55 – 17.64	0.210
> 60 y.o.	28.31	3.70 – 216.51	0.001
Hemoblobin < 12.0 g/dL	4.39	1.19 – 16.24	0.026
Leucocyte < 4,000/µL or > 12,000/ µL	8.97	2.42 – 33.29	0.001

Table 2. Susceptibility pattern of NTS bacteriemia vs. Salmonella typhi typhoidal from blood culture.

Antimicrobial	Non-typhoidal Salmonella Bacteremia (n=18)	Typhoidal bacteremia (n=111)
Amikacin	2 (11.1%)	7 (6.3%)
Amoxicillin clavulanate	18 (100.0%)	111 (100.0%)
Amoxicillin	16 (88.9%)	109 (98.2%)
Ceftazidime	18 (100.0%)	111 (100.0%)
Ceftriaxone	18 (100.0%)	111 (100.0%)
Ciprofloxacin	18 (100.0%)	111 (100.0%)
Cefotaxim	18 (100.0%)	111 (100.0%)
Ertapenem	18 (100.0%)	111 (100.0%)
Gentamicin	1 (5.6%)	7 (6.3%)
Imipenem	18 (100.0%)	110 (99.1%)
Levofloxacin	18 (100.0%)	111 (100.0%)
Meropenem	18 (100.0%)	111 (100.0%)
Tigecycline	18 (100.0%)	111 (100.0%)
Trimethoprim sulphamethoxazole	17 (94.4%)	111 (100.0%)
Piperacillin tazobactam	17 (94.4%)	11 (99.1%)

The Relationship between AAS (Addiction Admission Scale) and APS (Addiction Potential Scale) with Timely Graduation of UPH Medical Faculty Students

Engelberta Pardamean[1], Veli Sungono[2]

[1]*Department of Psychiatry, Faculty of Medicine, University of Pelita Harapan*
[2]*Public Health, Faculty of Medicine, University of Pelita Harapan*

Citation : Pardamean E, Sungono V. The Relationship between AAS (Addiction Admission Scale) and APS (Addiction Potential Scale) with Timely Graduation of UPH Medical Faculty Students
Medicinus. 2019 February; 7(6):170–173
Keywords : MMPI-2, Addiction, On time graduation, Addiction Admission Scale, Addiction Potential Scale
***Correspondance** : Veli Sungono, Public Health, Faculty of Medicine, University of Pelita Harapan
E-mail : veli.sungono@uph.edu
Online First : June 2020

Abstract

Background: Addiction influential to neurotransmitter damage in the brain, resulting in physical fatigue and behavioral changes that will affect the length of studies of students. The MMPI-2 questionnaire is an instrument used to assess the Addiction Admission Scale / AAS and Addiction Potential Scale / APS.

Objective: This study looks at the relationship between AAS and APS with the timely graduation of students.

Methods: The study design of this research was cross-sectional for students of the Faculty of Medicine who were running a co-ass program at the Dharmawangsa Mental Hospital and had carried out the MMPI-2 test. Data analysis was done using Stata IC version 16 using t-test, spearman correlation test, and logistic regression.

Results: Of the 81 respondents, 67% of women and 33% of men and students who graduated on time amounted to 79%. T-test results obtained an AAS score in the group that was not on time (mean 2.53 ± 1.37) significantly higher than the group that was on time / study period of 5.5 years (mean 1.27 ± 1.56) with a p value of 0.0035. APS has a significant correlation to AAS with a coefficient value of r of 0.2595 and p value of 0.0201. AAS logistic regression test for the accuracy of graduation has a p value of 0.0067 with an OR value of 1.559 (95% CI 1.09-2.21).

Conclusion: There is a significant relationship between AAS on time graduation and there is no significant relationship between APS with on timely graduation.

Introduction

Addiction is a condition of psychological addiction that is quite often experienced in human life, especially when experiencing a feeling of tension and pressure. The result of this addiction is very dangerous, because it can damage neurotransmitters in the brain that cause physical fatigue and changes in a person's behavior [1,2,3]. When this happens to students, it will greatly disrupt the timeliness of each student's study period. The results of a research conducted at the University of Bangladesh with 160 samples of students aged between 15-25 years found that 38.75% of addiction was due to the influence of friends and 31.88% of addiction because they wanted to try something new.[4]

On this basis, a study was conducted on UPH medical faculty students. The questionnaire used was MMPI-2 by assessing AAS (Addiction Admission Scale) and APS (Addiction Potential Scale) [5.6.]

Materials and Methods

This study uses a cross-sectional design by analyzing MMPI-2 test results with timely graduation. The respondents of this study were co-ass students who were undergoing Psychiatric Medicine at the Dharmawangsa Mental Hospital who had carried out the MMPI-2 test. The inclusion criteria were students of the Faculty of Medicine who ran co-ass program at the Dharmawangsa Mental Hospital and took the MMPI-2 test.

The invalid MMPI-2 test results are the test results which are stated to be inaccurate and inconsistent so they cannot be interpreted and must be excluded from this study. Graduation is on time, if the duration of medical study is ≤ 5.5 years and it is said that graduation is not on time, if the length of study is> 5.5 years.

Statistical Analysis

Data analysis was performed using Stata IC version 16 using a t-test to see the difference in the mean APS and AAS scale for timely graduation. Spearman correlation analysis is used to see the correlation between APS and AAS. To see the relationship of APS, AAS to timely graduation uses a logistic regression test with statistical significance indicators of p values below 0.05 and Odd ratio values and 95% confidence intervals.

Results and Discussions

From this descriptive survey, there were 81 respondents of the study consisted of Pelita Harapan University Faculty of Medicine students. This can be seen in Table 1.

The respondents of this study consisted of 67 percent women and 33 percent men. As many as 5 percent of respondents were married, and most of them, when they took the MMPI test, the status of respondents was still a student (72 percent). The consistency of this test is quite high at 99 percent, and the results of the test accuracy of 76 percent are considered quite accurate, and 76 percent are quite reliable.

Table 1. Respondent Characteristics

Variable	n	Percent
Gender		
Male	27	33.33
Female	54	66.67
Status		
Not Married	77	95.06
Married	4	4.94
Students Status		
Students	58	71.6
Co-Ass	23	28.4
Consistency Test		
Yes	80	98.77
No	1	1.23
Accuracy Result Test		
Deficient	2	2.47
Adequate	62	76.54
Moderate	16	19.75
Cannot be interpreted	1	1.23
Test can be trusted		
Deficient	2	2.47
Adequate	62	76.54
Moderate	16	19.72
Cannot be interpreted	1	1.23

Table 2. Timely Graduation Distribution

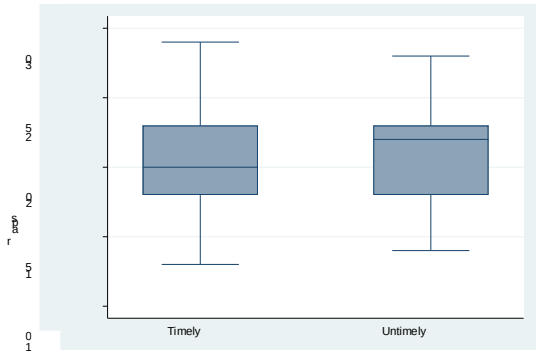
Graduation time	n	Percent
Timely Graduated	64	79.01
Untimely Graduation	17	20.99

From a number of research respondents, it appears that most 79 percent of students graduate on time, and as many as 21 percent does not graduate on time.

Table 3. Test Mean Difference between APS and AAS in Timely Graduated Groups

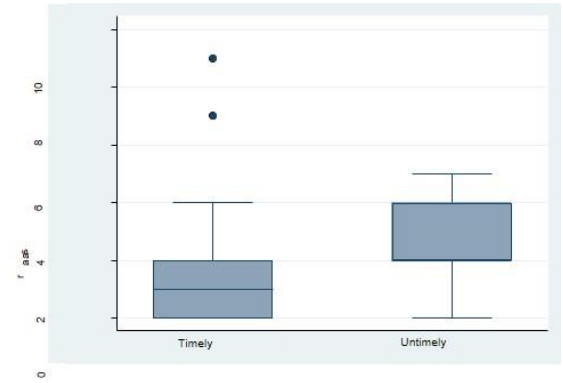
Group	Timely Graduated n=64	Untimely Graduation n=17	P value
	Mean±SD	Mean±SD	
APS	20.22±3.46	20.88±3.81	0.5353
AAS	1.27±1.56	2.53±1.37	0.0035

The results of the analysis of the Independent T-test on the APS in the group that graduated on time and not on time have not shown any significant difference with a p value of 0.5353. However, the mean difference of AAS (Addiction Admission Scale) in the timely graduated group showed a mean value of 1.27 ± 1.56, significantly lower than the untimely group of 2.53 ± 1.37 with a p value of 0.0035. This result is quite similar like the previous study that show students who has graduate on time has higher Ego Strength and dominance characteristic than student graduate not on time[7].



Graph 1. Box Plot between APS (Addiction Potential Scale) against the timeliness of graduation

The box plot graph above does not show a significant difference in mean APS (addiction potential scale) in the group that passed on time and the group that was not on time.



Graph 2. Box Plot between AAS (*Addiction Admission Scale*) against the timeliness of graduation

From the box plot graph above, the mean difference that is significantly different in the AAS (Addiction admission scale) in the group that passes on time has a lower score compared to the group that is not on time.

Table 4. Correlation test of APS and AAS

No	Variable1	Variable2	r	p
1	APS	AAS	0.2595	0.0201

Spearman Correlation Test get a significant positive correlation between APS (addiction potential scale) to AAS (addiction admission scale) with a p value of 0.02 and r coefficient of 0.2595.

Table 5. Logistic Regression Test between APS, AAS, MT for timely graduation.

No	Variable	p value	OR	95% CI
1	APS	0.5299	1.05	0.90; 1.22
2	AAS	0.0067	1.56	1.09; 2.21

Logistic regression test results between AAS on timely graduation found a significant relationship with p value of 0.0067 with Odd ratio of 1.559 with 95% confidence interval 1.09 to 2.21. However, the APS variable has not been found to have a significant relationship to the timeliness of graduating students.
In this study there are weaknesses, namely the MMPI-2 questionnaire, especially in the measurement of AAS and APS that cannot specifically measure the type of addiction that is dependent on each student, examples such as dependence on caffeine, nicotine and other substances are not measured specifically.

Conclusion

There is a significant relationship between addiction admission scale (AAS) to timely graduation. It means that the addicted student will finish their medical study longer than they are supposed to.

There is no relationship between addiction potential scale (APS) to timely graduation.

References

1. Carton, S. T., & Goodboy, A. K. 2015. College students' psychological well-being and interaction involvement in class. *Communication Research Reports*, *page*180-184.

2. E Guthrie, D Black, H Bagalkote, et al. Psychological stress and burnout in medical students: a five-year prospective longitudinal study. J R Soc Med. 1998; 91(5): 237–243.

3. Jelley RB, Parkes MA, Rothstein MG. Personality perceptions of medical school applicants. Med Educ Online [serial online] 2002; 7:11.

4. Mahbuba NazninSani. Procedia-Social and Behavioral Sciences vol5, 2010,pages 498-501.

5. James N. Butcher, Ph.D., John R. Graham, Ph.D., Yossef S. B. P, Ph.D, et al. MMPI-2 Basic Information. Source: University of Minnesota Press.

6. Hidajat Hubertus Kasan, Ragam MMPI-2 dalam Seminar MMPI-2, Jakarta, 2010

7. Hubungan antara panjangnya waktu kuliah dengan tanggung jawab, kemandirian, dan kekuatan ego mahasiswa di Fakultas Kedokteran, Medicinus Vol. 5 No. 3 Juni-September 2016

Effectiveness of Health Promotion Through Audiovisual Media and Lecture Methods on the Level of Knowledge in Elementary School Children About TB Disease

Monica Trifitriana[1], Mariatul Fadilah[2], Rido Mulawarman[1]

[1]Medical Profession Faculty of Medicine, University of Sriwijaya
[2]Department of Public Health and Community Medicine, Faculty of Medicine, University of Sriwijaya

Citation : Trifitriana M, Fadilah M, Mulawaran R. Effectiveness of Health Promotion Through Audiovisual Media and Lecture Methods on the Level of Knowledge in Elementary School Children About TB Disease Medicinus. 2019 June; 7(6):174–183
Keywords : Audiovisual media, Lecture methods, comprehension, TB disease, Health Promotion.
***Correspondance** : Monica Trifitriana Medical Profession Faculty of Medicine, University of Sriwijaya
E-mail : monica.trifitriana@rocketmail.com
Online First : June 2020

Abstract

Introduction : Indonesia is the number two country for TB incidence in the world. To reduce the morbidity and death rate of tuberculosis cases, WHO issued an END-TB Strategy program that has 3 pillars. Pillar number 2 on the importance of cooperation with government, private stakeholders, and community for the prevention of TB disease, one of them in the form of health promotion. The application of speech methods and audiovisual media in conveying information has some differences in the process and achievement of students' level of understanding. This study aims to compare the effectiveness of the use lecture methods and audiovisual media in conveying information.
Method : A total of 136 research subjects were 6th graders at Public Elementary School 205 Palembang and Private Elementary School YWKA Palembang divided into 2 groups for each elementary school. Each elementary school were subdivided into two groups, namely the audiovisual media group and the lecture method group. This study used quasi experimental design with nonequivalent pretest-posttest technique.
Result : After the intervention, the level of understanding for the audiovisual media group was 87.90% while for the lecture method was 83.00% (effective when> 75%) with a value of p <0.05. Conclusion: the delivery of information on TB disease in grade 6 students assessed in two schools, both public and private, using audiovisual media and lecture methods were both equally effective, but the effectiveness of the audiovisual media was higher than the lecture method so that audiovisual media is considered better than lecture methods.

Introduction

Tuberculosis or better known as TB is a contagious infectious disease caused by the mycobacterium tuberculosis, transmitted by droplet nuclei and first attacked the lung organ.[1] Tuberculosis is the main cause of the nine deaths throughout the world and the major causes of infectious agents, ranked higher than HIV / AIDS.[2] Based on WHO data in global report 2017, globally cases of TB in 2016 of 10.4 million people are equivalent to 140 cases per 100,000 population.[2,3] Indonesia is the country with the second largest number of new cases in the world after India.[4] In 2016, There are 9.549 TB cases with 5.674 BTA (+) cases and TB case notification numbers of 117 / 100,000 residents with BTA (+) 70/100.000 population.[4]

To reduce the morbidity and death rate of tuberculosis cases, WHO issued an END-TB Strategy program that has 3 pillars. Pillar number 2 on the importance of cooperation with government, private stakeholders, and community for TB prevention one of them in the form of health promotion.[5,6] Indonesia has started to promote health promotion of TB contained in Tuberculosis Control Strategy year 2011-2014, case of tuberculosis in indonesia.[7]Based on the Ottawa Charter (Ottawa Charter, 1986) Health Promotion is an effort made to the community so that they are willing and able to maintain and improve their own health.

Health promotion, such as health education can not be separated from the media because through the media, the message conveyed can be more interesting and understood, so that the target can learn the message to understand it so as to decide to adopt it to positive behavior.[8]

The method used in either the group or the most frequently used for mass is the lecture.[8] The lecture method is an oral narrative, the easiest method of conveying information and highly efficient without the need for media. The knowledge that can be gained from lecture methods can be overwhelming but does not make the listener understand clearly what is being said, it is also due to boredom and without the help of role play in the lack of knowledge can be remembered with this method.[10] Audiovisual media has the advantage of making someone remembers longer information and gives a more realistic picture so that audiovisual media is more effective. The process of remembering someone with visual + verbal techniques such as audiovisual media can increase a person's memory ability by 85% compared with just verbal (70%) and visual (72%).

The use of audiovisual media is considered more effective than lecture methods in terms of one's ability to remember. At the time of health promotion there are several methods and media to increase one's knowledge related to what will be delivered. Therefore, it is hoped that this research can assess the effectiveness of lecture method and audiovisual media related to the level of children's knowledge about TB disease so that later methods or media that are considered better will be applicable in the wider community to provide a proper way of delivering health programs or counseling so as to reduce morbidity and mortality from the disease.

Methods

This type of research is quantitative using quasi experimental design with nonequivalent pretest-posttest technique. The groups in this study were divided into video audiovisual media groups (F1), and comparison groups or groups of lecture methods with direct explanation (F2). Questionnaires and explanations in this study are presented with a lecture or audiovisual media in the form of videos about TB disease has the same information.

The research was conducted in March 2018 in two schools, namely Public Elementary School 205 Palembang and Private Elementary School YWKA Palembang. The sample of this research is children who are sitting in elementary school at the final level or 6th grade. Dependent variable in this study is the method of learning while the independent variable in this study is the level of knowledge of elementary school children. The level of student understanding is divided into three groups: the level of understanding is good when the answer is more than 80% correct, the level of understanding is enough if the answer is 65% -80% true, and the level of understanding is less if the answer is less than 65% .[12]

The method is a regular or systematic way that is used to carry out the work in order to achieve the goals as desired. Methods in health promotion is an activity or effort to deliver health messages to the community, groups or individuals using the application of ways so that can be understood community.[8] Assessment of effectiveness conducted using the test independent sample t test. A method can be said to be effective if the result can reach or more than 75%.

Audiovisual media is a moving and dynamic medium that can be seen and heard and delivered through electronic aids with the advantages of easy to understand, more interesting, and involving all the five senses so that audiovisual delivery is more easily understood.[9] The lecture method is an oral narrative, the easiest method of conveying information and very efficient without the need for media. The knowledge that can be gained from lecture methods can be overwhelming but does not make the listener understand clearly what is being said, it is also due to the factor of boredom and without the help of the role plays in the lack of knowledge can be remembered by this method.[13]

Result

This research use two research groups namely audiovisual media group and lecture method group conducted in each school either in public elementary school or private school. The purpose of this research is to see the difference of

audiovisual media effectiveness and lecture method in conveying information to 6th graders and students about TB disease.

Characteristics of Respondents

In this study, an assessment of the characteristics of the study respondents studied in terms of gender, age, father's work, and mother's work. Assessment of this respondent characteristic is seen from each State Elementary and Private Elementary School. The goal is to see whether the variables studied can affect the effectiveness of health promotion both lecture method and audiovisual media to knowledge of TB disease.

Table 1 shows the characteristics of research respondents in grade 6 children in private elementary schools. In 6th grade students in private elementary school, male gender, age 10 years, father's job is private employee, and mother job is housewife is the most variable in lecture method group. Meanwhile, female gender, age 11 years, father's job is a private employee, and mother's job is housewife is the most variable in audiovisual media group. Table 2 shows the characteristics of study respondents in grade 6 children at SD Negeri. In 6th grade students in elementary school, female gender, age 11 years, father's job is labor, and mother's job is housewife is the most variable in lecture group. Meanwhile, female sex, age 11 years, father's job is labor, and mother's job is housewife is the most variable in audiovisual media group.

Univariate Analysis

In table 3, an assessment of the level of students' knowledge in the private elementary school is divided into 3 groups, namely less, enough, and good by looking at the results of pretest and posttest. Knowledge of students in private elementary schools in the group of lecture method and audiovisual media seen from the pretest results done is 67.6% (N = 23) included into the level of knowledge less and 32.4% (N = 11) included into the level of knowledg enough. The result of posttest done on group of health promotion method using lecture method after intervention then got result 79,4% (N = 27) included into category level of good knowledge. While in the group of health promotion methods using audiovisual media after the intervention obtained 91.2% (N = 31) included into the category of good knowledge level. Overall posttest results of both groups of health promotion methods 0% (N = 0) fall into the category of less knowledge level.

In table 4, an assessment of students' level of knowledge in Public Elementary School is divided into 3 groups, namely less, enough, and good by looking at the results of pretest and posttest. The knowledge of students in Public Elementaru School in the group of lecture method and audiovisual media seen from the pretest result is 67.6% (N = 23) included in the level of knowledge less and 32.4% (N = 11) included into the level of enough knowledge. The result of posttest done on group of health promotion method by using lecture method after intervention then got result of 55,9% (N = 19) included into category level of good knowledge. While in the group of health promotion methods using audiovisual media after the intervention was obtained 88.2% (N = 30) included into the category of good knowledge level. Overall posttest results of both groups of health promotion methods 0% (N = 0) fall into the category of less knowledge level.

Bivariate analysis

In table 5, the level of understanding of 6th grade students in private elementary schools using the lecture method reached an average of 84.42% or included in the category of good understanding level, whereas with audiovisual media reached an average of 88.78% or belonging to the category good level of understanding. At the level of understanding of 6th grade students in Public elementary School with the lecture method reached an average of 81.59% or included in the category of good understanding level, while audiovisual media reached an average of 87.09% which is also included in the level of good understanding. If the level of students' understanding is combined with both private and piblic elementary schools using an average lecture method reaches 83.00% or included in a good level of understanding while the audiovisual method reaches an average of 87.90%. Broadly speaking, the level of understanding of elementary school children in private

elementary school by using lecture method and audiovisual media shows a higher increase when compared to Public elementary school. Audiovisual methods always experience a higher level of understanding compared to lecture methods, both from Public Elementary Schools, Private Elementary Schools, as well as a combination of public and private primary schools.

The level of knowledge of students seen from the results of posttest conducted in both groups showed a significant difference with p value of 0.05 or also called 95% confidence level. The significance test was performed using the Mann-Whitney test. With p value <0,05 it means that there is a significant difference in posttest result of intervention given by both audiovisual media and lecture method in private elementary, public elementary, and public elementary and private school.

In Table 6, the minimum targets to be achieved in the study are equal to or more than 75% true. The level of students understanding by lecture method reaches an average of 83.00% of correct answers, while with audiovisual media reaches 87.90% correct answer. The difference from the posttest of audiovisual media and the lecture method is 4.90%, higher for audiovisual media. The test performed on this result is a 95% confidence level using the Mann-Whitney test. Audiovisual media and lecture methods are equally effective in conveying information to students.

Multivariate analysis

A multivariate analysis was conducted, to see the factors that influenced the increase of students' knowledge of TB disease in this study. Influencing factors consist of gender, age, Parent's work, School, and health promotion. After the binary logistic test, it was found that the factors of health promotion method and age that influence the knowledge level of the child menganai the disease of tuberculosis so that obtained the formula Y = 1,306 + 1.507 (X1) - 1,070 (X2). In conclusion, when a child aged 10-11 years and using audiovisual methods can increase the knowledge of TB 2 times larger.

In the odd ratio, obtained 4,514 results there is a group of health promotion methods means health promotion method is a risk factor and can increase the knowledge level of TB 4,514 times greater. At the age of odd ratio results obtained 0.343 where if the value of odd ratio less than 1 then considered the determinant factor or not risk factors so that age is not a risk factor in increasing knowledge of TB.

Discussion

Differences in Pretest and Posttest Value of Both Groups in Public Elementary School and Private Elementary School

The mean values obtained at Public Elementary School and Private Elementary School from posttest conducted on audiovisual media group increased compared with their pretest value, in the lecture group method also increased the posttest value compared to the pretest value but the increase of the value was not as big as the increase that occurred at audiovisual media groups. This suggests that video or audiovisual media is superior to lecturing methods in conveying information and may affect students' level of understanding. This result is also seen in a mutual study showing that the group's understanding level of audiovisual video intervention is higher than the lecture intervention group in the form of an explanation.[17] From the results obtained in both groups shows the acceptance of information by using audiovisual media is better than the lecture method. It is also in accordance with the health department's explanation that the best informed media delivery by audiovisual uses where audiovisual can increase one's comprehension 6x compared to lecture or verbal methods only.[8]

Although the increase in understanding among audiovisual media groups is better than that of the lecture method, the increased understanding of lecturer methods is also significant. One of the advantages of the lecture method is discussion, in the discussion the participants of the lecture meteode can ask the less obvious about the information they receive to the speaker. However, audiovisual media may attract participants' attention and interest better than lecture methods but discussions on lecture methods may affect TB knowledge in elementary school children.

Understanding of students in public and private primary schools about TB disease is higher in audiovisual media group when compared with lecture method group. The significance test was performed using Wilcoxon Signed Ranks test with a significance level of 5% or p value of 0.05. After the significance test on the students 'level of understanding about TB disease, p value = 0.00 (p <0.05), meaning that there is a significant difference to the level of students' understanding of TB disease
The average values obtained in private elementary school of posttest performed both in audiovisual media group and lecture method increased pretest value higher than Public Elementary School. in Public Elementary School also increased the value of posttest compared to its pretest value but the increase in value is not as big as the increase that occurred in private elementary either from lecture method or audiovisual media. This indicates Private Elementary School has a higher level of understanding compared to Public Elementary School when receiving information submitted. This is consistent with sandjaja research which states that Private Element always maintains its quality and improves excellence by selecting competent teachers in teaching so that parents feel satisfied and always want to send their children to private education.[14]

Differences Effectiveness of Audiovisual Media and Lecture Methods.

To overcome the limitations of time funds in the study then the assessment of differences in effectiveness is done by determining the limit or target to be achieved. A method is said to be successful or effective when reaching a target of at least 75% in accordance with research conducted by safitrah.[18]

The posttest value obtained from the audiovisual method group has exceeded the specified target of 75%, while the posttest value obtained from the lecture group is also above the target. However, although both methods are both passing the targets set, the effectiveness value in the audiovisual media group is higher than the lecture method. This is evident from the enthusiasm of elementary school children in both public and private elementary schools when watching videos about TB disease is quite high. Students' interest in participating in watching videos together was also a factor influencing answers to the questionnaire.

In the lecture method group also increased posttest value compared to pretest value, but not as big as in audiovisual media group. The decrease in the concentration of elementary school children in lecture methods influences the effectiveness of the reception of information by lecture participants which may impact on the answers as well as the students' pretest and posttest values. This is in accordance with the ministry's health statement, that if the communication through verbal alone can make bored participants who listen and increase the ability of someone with verbal only 1x to improve memory compared to audiovisual.[8]

In this study obtained results that show that audiovisual media affect the acceptance of information better when compared with the lecture method. The interest and enthusiasm of the video participant looks higher when compared to the lecture method so that the information conveyed by video is more easily accepted by the students. Information which is delivered using the video more easily accepted by the students. in accordance with Sanjaya's opinion using audiovisual as a learning medium can make the learning process two way traffic more likely to occur so that learning becomes more interactive.[19]

Audiovisual media groups and lecture methods have met the limits or targets set in the study. From the results obtained from both groups it can be concluded that the audiovisual method and the lecture method are equally effective with the effectiveness value in the audiovisual media group higher than the lecture method. The significance test was performed with an accuracy of 95% or p value of 0.05 to see if there was any significant difference in the effectiveness of audiovisual media compared with the lecture method. After significance test obtained p value = 0,00 (p <0.05), meaning there is significant difference to effectiveness of audiovisual media and lecture method in conveying information about TB disease. This is in accordance with the ministry's health statement that audiovisual media is a medium that uses the eyes and ears simultaneously in receiving information so that the process of receiving information becomes more effective.[8]

Multivariate Analysis

Multivariate analysis was conducted to see the most influencing factors on TB disease knowledge level. In this study, included factors such as gender, age, parent occupation, type of primary school, and health promotion methods. In this research, tested by using binary logistic obtained fakrot method of health promotion and age which influence to level of knowledge about TB disease. the formula Y = 1,306 + 1.507 (X1) - 1,070 means that if a child is aged 10-11 years and using audiovisual methods can increase the knowledge of TB 2x larger. In the odd ratio, health promotion method has a value of 4,514, it means that health promotion method is a risk factor and can increase 4x more about TB disease knowledge. Whereas, age has an odd value of 0.343 is a determinant or not a risk factor to increase the knowledge level of TB disease.

Conclusions

Health promotion methods using audiovisual media and lecture methods are equally effective, but the value of effectiveness on audiovisual media is higher than that of the lecture method so that audiovisual media is considered better than the lecture method.

Acknowledgement

The authors would like to show our gratitude to the teaching staff of the Department of Public Health and Community Medicine, Faculty of Medicine, Sriwijaya University.

References

1. Departemen Kesehatan RI. 2016. *Petunjuk Teknis dan Manajemen Tatalaksana TB anak*. Jakarta, Kemenkes, hal. 3
2. World Health Organization. 2017. Global Tuberculosis Report 2017. Switzerland. Jenewa: World Health Organization. hal. 188
3. Departemen Kesehatan RI. 2014. *Pedoman Nasional Pengendalian Tuberkulosis*. Jakarta, Kemenkes, hal. 3
4. Kemenkes RI. 2016. INFODATIN: *Pusat Data Dan Informasi Kementerian Kesehatan RI*. Hal 2
5. Kemenkes RI. 2017. *Profil Kesehatan Indonesia Tahun 2016*. Jakarta: Kemenkes RI. Hal 145-155
6. A, Asyari. *Childhood Tuberculosis: A Neglected Paradigm in Developing Countries*. Departement of Public Health Indonesia. 3(1) : 7-10.
7. World Health Organization. 2015. *The End TB Strategy*. Switzerland. Jenewa: World Health Organization. hal. 2
8. Departemen Kesehatan RI. 2014. *Pedoman Nasional Pengendalian Tuberkulosis*. Jakarta, Kemenkes, hal. 3
9. Kemenkes RI. 2016. *Promosi Kesehatan*. Jakarta: Kemenkes RI, Hal 73.
10. Kemenkes RI. 2011. *Promosi Kesehatan di daerah bermasalah kesehatan*. Jakarta: Kemenkes RI, hal 47
11. Direktorat Tenaga Pendidikan. 2008. *Strategi Pembelajaran dan Pemilihannya*. Jakarta: Dinas pendidikan, hal 14
12. Notoatmodjo, S. 2011. *Kesehatan Masyarakat Ilmu & Seni*. Jakarta, Rineka Cipta
13. Safitrah, muhammad mahardian. 2017. Perbedaan efektivitas media audiovisual dan metode ceramah dalam menyampaikan informasi kepada mahasiswa fakultas kedokteran universitas sriwijaya mengenai kegiatan kepanitraan klinik, palembang:

Univ. Sriwijaya, hal 31.

14. Direktorat Tenaga Pendidikan. 2008. *Strategi Pembelajaran dan Pemilihannya*. Jakarta: Dinas pendidikan, hal 14

15. Sandjaja, soejanto stefanus. 2013. *Perbedaan Pemahaman Tema Moral Murid Sekolah Dasar Ditinjau Dari Status Sekolah*. Jakarta: UKI, hal 2.

16. Rizalie, ahmad mulyani. 2015. Kajian Tentang Kepedulian Orang Tua Terhadap Proses Pendidikan di Sekolah Dasar. Banjarmasin: univ. Lambung Mangkurat, hal 1

17. Purwanto, M.N. 2012. Prinsip-prinsip dan Teknik Evaluasi Pengajaran, Remaja Rosdakarya, Bandung: Indonesia. hal 82.

18. Muthia, farah dkk. 2015. *Perbedaan Efektifitas Penyuluhan Kesehatan menggunakan Metode Ceramah dan Media Audiovisual (Film) terhadap Pengetahuan Santri Madrasah Aliyah Pesantren Khulafaur Rasyidin tentang TB Paru Tahun 2015*. FK Untan, hal 1.

19. Sanjaya, W. 2011. Perencanaan dan Desain Sistem Pembelajaran, cet.4. Kencana, Jakarta,:Indonesia, hal 211.

20. Suyami. Pengaruh Pendidikan Kesehatan Melalui Metode Ceramah dengan Media Audiovisual Terhadap Pengetahuan Ibu Tentang Menopause Di Kecamatan Klaten Utara. Jawa tengah, hal 13.

Table 1. Characteristics respondents in Private Elementary School

Private Elementary School		**Promotion Health Method**			
Variable	**Category**	**Lecture**		**Audiovisual**	
		N	**%**	**N**	**%**
Gender	Male	19	27,9	15	22,1
	Female	15	22,1	19	27,9
Age	10 years	20	29,4	10	14,7
	11 years	14	20,6	24	35,3
Father work's	Worker	4	5,9	7	10,3
	Teacher	1	1,5	2	2,9
	Private employee	11	16,2	10	14,7
	Merchant	6	8,8	5	7,4
	Businessman	1	1,5	0	0
	Tailor	1	1,5	0	0
	Civil servant	7	10,3	7	10,3
	Police	0	0	1	1,5
	Driver	2	2,9	1	1,5
	Soldier	1	1,5	1	1,5
Mother work's	Midwife	0	0	1	1,5
	Lecturer	0	0	1	1,5
	Teacher	4	5,9	4	5,9
	Housewife	24	35,3	24	35,3
	Private employee	1	1,5	0	0
	Merchant	5	7,4	2	2,9
	Civil servant	0	0	2	2,9

Table 2. Characteristics of Respondents in Public Elementary School

Public Elementary School		**Promotion Health Method**			
Variable	**Category**	**Lecture**		**Audiovisual**	
		N	**%**	**N**	**%**
Gender	Male	16	23,5	13	19,1
	Female	18	26,5	21	30,9
Age	10 years	1	1,5	0	0
	11 years	16	23,5	16	23,5
	12 years	12	17,6	15	22,1
	13 years	4	5,9	3	4,4
	14 years	1	1,5	0	0
Father Work's	Worker	21	30,9	18	28,5
	Teacher	0	0	1	1,5
	Private Employee	0	0	3	4,4
	Merchant	1	1,5	2	2,9
	PLN Worker	2	2,9	0	0
	Civil Servant	0	0	1	1,5
	Driver	3	4,4	3	4,4
	Unemployee	6	8,8	3	4,4
	Soldie	1	1,5	3	4,4
Mother Work's	Teacher	0	0	2	2,9
	Housewife	31	45,6	29	42,6
	Merchant	1	1,5	1	1,5
	Tailor	1	1,5	0	0
	Nurse	0	0	1	1,5
	PLN worker	1	1,5	0	0
	Worker	0	0	1	1,5

Table 3. Pretest and Posttest Result in Private Elementary School (Univariat analysis)

Group		Student Knowledge						Sum	
		Less		Enough		Good			
		N	%	N	%	N	%	N	%
Pretest	Lecture	23	67,6	11	32,4	0	0	34	100
	Audiovisual	23	67,6	11	32,4	0	0	34	100
Posttest	Lecture	0	0	7	20,6	27	79,4	34	100
	Audiovisual	0	0	3	8,8	31	91.2	34	100

Table 4. Pretest and Posttest Result in Public elementary School (Univariat analysis)

Group		Student Knowledge						Sum	
		Less		Enough		Good			
		N	%	N	%	N	%	N	%
Pretest	Lecture	23	67,6	11	32,4	0	0	34	100
	Audiovisual	23	67,6	11	32,4	0	0	34	100
Posttest	Lecture	0	0	15	44,1	19	55,9	34	100
	Audiovisual	0	0	4	11,8	30	88,2	34	100

Table 5. Comparison from post-test result using Lecture Method and Audiovisual Media

Group		Amount (N)	Average of student knowledge	*P value*
Private Elementary School	Lecture	34	84,42 %	0,006
	Audiovisual	34	88,78 %	
Public Elementary School	Lecture	34	81,59 %	0,002
	Audiovisual	34	87,03 %	
Both school	Lecture	68	83,00 %	0,000
	Audiovisual	68	87,90 %	

Table 6. Differences Effectiveness of Audiovisual Media and Lecture Method from Percentage of Posttest Results After Intervention

Group	**Amount (N)**	**Average of Student Knowledge**	**Target**	**Result**
Lecture	68	83,00 %	75 %	Effective
Audiovisual	68	87,90 %	75 %	Effective
Dufference Persentase		4,9 %		

Table 7. Multivariat analysis

Variable in equation	**Nilai koefisien**	**Konstanta**	**Category**	**Odd ratio**
Health Promotion Method	1,507	1,306	0 = lecture	4,514
			1= Audiovisual	
Age	-1,070		0 = 10-11 years	0,343
			1 = >12 years	
Formula	Y = 1,306 + 1,507 ($X_{1)}$ - 1,070 (X_2)			

Assessment of Doctor-Patient Communication Among Residents in Internal Medicine Polyclinic At RSUP Dr. Mohammad Hoesin Palembang 2014 Using Simplified Checklist of Calgary Cambridge Guide

Dipika Awinda[1], Rizma Adlia Syakurah[2], Mariatul Fadilah[2]

[1]*Medical Profession Faculty of Medicine, University of Sriwijaya*
[2]*Department of Public Health and Community Medicine, Faculty of Medicine, University of Sriwijaya*

Citation : Awinda D, Syakurah RA, Fadilah M. Assessment of Doctor-Patient Communication Among Residents in Internal Medicine Polyclinic At RSUP Dr. Mohammad Hoesin Palembang 2014 Using Simplified Checklist of Calgary Cambridge Guide Medicinus. 2019 June; 7(6):184–194
Keywords : doctor-patient communication, residents, checklist Calgary Cambridge Guide.
***Correspondance :** Rizma Adlia Syakurah Department of Public Health and Community Medicine, Faculty of Medicine, University of Sriwijaya
E-mail : rizma.syakurah@gmail.com
Online First : June 2020

Abstract

Introduction : Misperceptions between doctors and patients can bring negative impact for both the doctors and patients. Misperceptions may occur due to miscommunication during doctor-patient communication. Therefore, assessment during the communication process is necessary.

Methods : This study was a descpritive study with qualitative approach. *Checklist Calgary Cambridge Guide* (CCCG) was chosen as instrument because it has been widely used in many country.The study was condicted in Polyclinic Internal Medicine of dr. Mohammad Hoesin Hospital due to its high patient load with various diseases that is suitable for doctor-patient communication observation. Subjects were six residents in the department. Observation was done during the communication process. Deep interview was then done to assess the resident's knowledge and opinions in doctor-patient communication and barriers related to it.

Results : Majority of the residents failed to do some points of the CCCG, which includes self introduction, role and nature of interview, obtain consent and explain process, obtain permission prior to physical examination.

Conclusions : In conclusion, the doctor-patient communication among residents in Internal Medicine Polyclinic At RSUP Dr. Mohammad Hoesin Palembang.

Introduction

Doctor-patient communication is one of the competence that must be mastered by doctors. This competence has a great role in aiding the physician to solve medical cases.[1] The change of paradigm from doctor-centered to patient-centered results in less attention towards the patient during information gathering.[2] This generate gap between doctors and patients.

The pattern of doctor-patient relationship also undergo changes from paternalistic into individualistic, emphasizing the doctors' role as the health care provider.[3] If patients are dissatisfied toward the health service given, patients have the right to express the complaints and even to sue.[4]

Good doctor-patient communication can improve health care services, increase patients' compliance, increase patients' satisfaction, increase accuracy in diagnosis, and decrease malpractice.[5]

The objective of this research was to assess communication done by residents

in Polyclinic of Internal Medicine Department of dr. Mohammad Hoesin Hospital. In addition, barriers related to communication was also identified. Polyclinic of Internal Medicine Department of dr. Mohammad Hoesin Hospital was chosen due to the heavy patient load and its variation in health cases, which can picture the doctor-patient communication more clearly. This research used Checklist Calgary-Cambridge Guide which has been utilized in many country.[6]

However, the numerous points in CCCG (56 points) and difference in social and cultural aspects between Indonesia and other countries, triggers the simplification of CCCG into 15 points, to make it more applicable.[7] The simplification was guided by a panel of experts.

Methods

This research used qualitative approach. Checklist Calgary-Cambridge Guide was simplified with expert panel method. Discussion was done with experts related to the discipline, to generate key points that was more applicable in Indonesia. The simplified checklist was used to obtain data during observation and depth interview to subjects. Subjects are six residents of Internal Medicine Department that was chosen through purposive sampling.The criteria of inclusion were based on education level,[8] gender,[9,10] and origin[11,12] (Table 1). This research was conducted in Polyclinic of Internal Medicine Department of dr. Mohammad Hoesin Hospital on November 2014.

Subjects was observed during patient consultation and underwent depth interview afterwards. Observation was done from 09.00 a.m to 14.00 p.m. Lentgh of interview ranged from 15 to 30 minutes.

Analysis was done through qualitative analysis. Model Miles and Huberman, which was considered analytical and interactive, was chosen. The analysis consists of three phases: data reduction, data display, and conclusion or verification.[13]

Results

Fifteen points of simplified CCCG was obtained from discussion with panel of experts (Table 2). Experts in this reseach were doctors that had received doctor-patient communciation skills training and some clinical doctors.

Observation results is shown on Table 3. Based on results obtained from Table 3, observation, and deep interview, point 01 of the CCCG was done well. Patients were addressed properly and greeted well. Identification was not done because it was already done by the administration unit before entering the polyclinic. The following are the subjects' thoughts upon point 01 of CCCG.

Subject 1: "We usually only verify the patient's identity in the polyclinic by looking at the patient's medical card."
Subject 2: "Well, greet them as needed just for checking. The name of the patient has already been called by the nurse."
Subject 4: "The patient's name was already written on the status so its not necessary to ask again. The nurse has already mention their name anyway."

Point 02 was only done by Subject 6 without explaining the purpose of the anamnesis. The other subjects felt that it was not necessary to do point 02 with several reasons.

Subject 1: "If we do point 02 completely, it will create an uncomfortable situation."
Subject 3: "Point 02 is important, however its a bit awkward if we do it."
Subject 5: "Self introduction was never done because I think its not necessary beacuse most of the patients were adults. However, if the patients are children, it is necessary to give explanation to the parents and if the patient is a pregnant woman, it is necessary to tell the husband. Nevertheless, I still think its not too important."
Subject 6: "I believe its more important to make the patient comfortable by giving greetings and praise other than explaining the purpose of anamnesis."

Point 03 was done well by all residents. The use of correct opening will enhance the easiness in obtaining the chief complains. Point 03 is usually done by the residents while doing physical examination to minimze time consumption.

Subject 1: "After asking teh chief complain, the patient usually will explain it directly."
Subject 3: "We ask the patient what is the chief complain or ask whether his/her condition is better or worse."
Subject 4: "In order to use time more effectively, after greeting the patient we

usually directly ask patient to lie on the bed. While doing physical examination, we do anamnesis."

Point 4 is necessary for resident to obtain further information of patient's complain. The use of open and closed sentence must be used based on the question intended. The incorrect use of the sentence will lead to unsatisfactory answers.

Subject 1: "Yes, opened and closed questions are important. If we don't use it correctly, it will be hard to find the approximate differential diagnosis."
Subject 4: "Yes, both of the question type are important. However, the use is adjusted based on the problem faced."

Point 05, 06, and 09 was considered difficult by some residents due to different personalities. However, majority of them did this point.

Subject 1: "We try to use the correct facial expression. Male doctors usually a bit rigid in facial expression while female doctors are more flexible."
Subject 2: "I am a bit rigid. Well, not rigid but my facial expression is basically like this and really hard to adjust."
Subject 4: "Doctors voice tone and expression are adjusted according to the patient. If the patient is a young mother, then a soft tone and frequent smiles are a great choice. However, with elderly male patients, a soft and a calm expression is more suitable. Appropriate voice tone and facial expression is required to prevent."

Point 07 and 08 are needed so the information obtained are complete and less time are required. Unsiystematic anamnesis leads to ineffectivess.

Subject 1: "We must ensure that the anamnesis is still in the line. Therefore, knowledge about the correct differential diagnosis is really important."
Subject 3: "If it occurs, we kindly pause the current conversation and lead back to the right course."

Observation of point 11 shows that residents only address the patient to lie down on physical examination bed and then vital signs are performed by clerkship students. During physical examination, residents seldom asks for informed consent and neglects hand hygiene.

Subject 1:" I didn't perform it because its too rigid and consume quite a lot of time."
Subject 4: "Informed consent during examining vital signs are not necessary. However in sensitive cases such as asking patient to open their clothes, then informed consent is necessary."

The use of simple and understandable language was done well by all residents. Parables are often used by them to explain certain information to patients with high level of education.

Subject 1: "We use sophisticated language if the patient has high level of education. Simple language are used in patients with lower level education."
Subject 4: "We seldom use medical terms."
Subject 6: "We adjust language based on what language the patient is using."

Point 13 and 14 was not done in general polyclinic because definitive diagnosis was not yet ruled. In specific polyclinic, the two points are done well.

Subject 1: "In specific polyclinic we make definitive diagnosis and plan further examination needed."

In closing anamnesis (point 15), residents scheduled for another meeting with patients and review the contents of the interview briefly while emphasizing in important points such as how to take the medication.

Subject 4: "We educate the patient during closing session of anamnesis."

Discussion

Initiating the Session

This stage aims to create an environment that is supportive and comfortable for the patient, obtain the identity of the patient and determine the main complaint that brings a patient comes to a doctor. By creating an atmosphere that is comfortable and quiet then the patient will be more open in telling his problems, it will be very influential in healing process.[14]

From the observation of the resident, first stage of interviews was conducted well. Residentt greets patients with a friendly expression. Patient also greets the resident and hopes the resident do similar towards other patients. This is consistent with the culture in Southeast Asia which is very concerned with the greeting as a sign

of hospitality and respect for.[15] However, very few resident do self introduction. Supposedly, before a doctor asks chiesf complaint of the who were brought to the hospital, the doctor should introduce themselves first, find out the patient's identity and explain the benefits of anamnesis that will be submitted by the doctor.[16]

It is intended that the bond formed between the doctor and the patient so that the doctor can determine patient's feeling and mood that would make further anamnesis easier. In search of the main complaints of patients, residents may use open-ended questions that are said through local language (Bahasa Palembang, Java) to better familiarize themselves with the local population of patients because differences in ethnicity. Races or ethnicity may influence the patient's level of confidence to health care providers.[12] The use of open sentence when asking the patient's complaint is also advisable in order to obtain deeper information.[17]

Information Gathering

This stage is the most important phase of a doctor-patient communication. Without doing this stage, it is impossible doctors can find out the correct examination to be done and also the correct treatment. The residents in Internal Medicine Department do this stage while performing a physical examination in order to save time. Resident also response verbally and non-verbally to make the patients feel that they are paying attention to the patients.[7]

The question posed by the resident must be already structured and asked for their intended purpose to rule out diagnosis. Specific questions need to be used in anamnesis to prevent considerable amount of time comnsumption and ensure good results.[16] Specific questions arise from the ideas of residents related to chief complain. In this case, insight and knowledge resident indispensable.

In accordance with the analogy of fishing that is widely used in understanding how to anamnesis, [18] there are two ways to catch fish: using nets or inducement (fishing thread). When we fished with nets, then the result is not in accordance with the wishes of the angler. Garbage might caught into nets and fishing destination is not necessarily netted, so that this method more laborious and time consuming.

On how to use threads fishing, anglers can control how and what bait should be given so that the fish were obtained as expected.

In addition to relying on communication skills, resident prioritize patients to conduct investigations such as lab tests, X-ray or EKG. In fact, approximately 78% of the diagnosis can be confirmed by the ability of a good history, 12% with a physical examination and 10% with laboratorium19.Hal examination is done so that the resident be more confident with the diagnosis he was thinking.

Physical Examination

At this stage of communication, what must be done is the time of giving informed consent and explains the procedure. However, this is rarely done because it is still an uncommon habit and checking vital signs is considered unharmful to patients that it doesn't require informed consent.

Informed consent is valid if the patient is conscious and able to make a decision and in the absence of drugs and alcohol. Supposedly, the entire health care practitioners must obtain consent (consent) of the patients that were able to take decisions.[20] Only patients with certain conditions doesn't have the need to give informed consent such as emergency patients, patients under influence of drugs or alcohol, and patients with mental disorders. [21]

Many of the problems can arise from poor informed consent process. This process can affect the poor treatment of patients who do not need to be done so as to prevent the occurrence of a hazard. Although the actions to be taken not to cause physical damage, the decision were taken without any prior informed consent would undermine the autonomy of the patient.[20]

In Internal Medicine Polyclinic, physical examinations are performed in wards and separated by sheets. When performing a physical examination, residents seldom wash their hands. The distance between the resident and sink is near and has been provided with hand sanitizer. Unfortunately, hand hygine among the residents is still poor. This lacking habit might enhance nosocomial infection.[22]

Explanation and Planning

Parables or modality in explaining information to patients is a technique that is performed by the resident. It is easier for residents to convey information and ensure that patients understand the procedure.[16] Resident also involves patients in determining the type of medication or when taking decisions and schedule a time to take medication. It is intended that the patient is easier to remember what was said and comply towards the agreed plan. Medical term is rarely used, given the patient in the clinic are mostly elders and have low education levels. This is consistent with a review of the American College of Physicians (ACP), which states that the use of medical language is not recommended in providing information to patients.[17]

Resident also uses a firm tone when giving explanations about the things that need to be avoided by pasien. Humors are often presented by the resident so that the patient is more relaxed and easier to receive the information provided. Moreover, by making someone laugh, can increase their comprehension by emphasizing topic consciously, can overcome the paradox, aggression.[23] Lack of explanation will result in a low level of knowledge about the diseased patients subsequently leading to the failure of the therapy process.[3]

Closing the Session

At this stage, the resident enters into a contract with the patient in accordance with the treatment or follow-up inspection. It is intended that the problems experienced by patients can be solved completely complete because not all diseases can be cured in a single meeting.

Doctors must be able to remind the patient to comply towards the medication, to control every few months, and visit health centers when the drug prescribed is exhausted. Skills in closing the interview allows the patient to feel comfortable with the plan that has been agreed in advance.[25]

In contracting with patients, residents often asked by patients to the time set in accordance with the schedule of the patient. Under certain conditions, the resident close interview with repeat prescriptions and restrictions that should be avoided patient during the treatment process, remind schedule for examination, remind the patient to fast before further investigation, or just say hello. By doing this step, it will provide benefits to physicians in resolving more effective consultation and start the next interview without being burdened with the problems that exist in the previous interview, because the problem with the previous interview may be a new problem in the next interview.[26]

Consultation Time

Time consultation with regard to the level of consultation services are given with a relatively longer time which will improve service quality and better outcomes for patient.[27] Physicians with a longer service time prescribe fewer thus lowering costs in drug spending, providing more education, giving more explanation of a better lifestyle, and other health promotion, better in the face of a patient with a psychosocial problems,[28] allows patients to care for themselves better, provide better clinical care, achieveed a greater level of patient satisfaction, and avoid legal issues.[27]A large number of patients who visited the clinic Disease in RSMH resulted resident physicians must try to resolve the problem quickly and accurately. There are conditions in which the patient caused doctors try to maintain performance, while making proper diagnosis and treatment as well as giving maximum service with a short time.

Time pressure has resulted in a decline in patient care, short consultation period which will then affect the doctor-patient[29] communication. Consultation time span varies in each country depends on the variables related to the physician, place or country, and those associated with patient.[30]According to Anderson et al, found no relationship between good a consultation with a range of consulting time, but the doctor with a good proportion of the consultation showed variation in the length of time consulting.[31]

Points of simplified checklist Calgary Cambridge that were not done by residents are presented in Table 4.

Effective doctor-patient communication provides benefits in improving medical care and treatment of the patient's health problems. Most patients in the clinic Disease satisfied with the communication given by the resident. The patient

revealed that the resident in Internal Medicine is friendly enough to communicate, few are complaining that the residents might seem ignorant. This is caused by emotions, and fatigue experienced by residents. Patients are more concerned about the services provided by the hospital as a patient queue length, the guard who does not know the structure of the hospital, making it difficult patients and other problems.

In Asia, which includes Indonesia there in, the relationship between doctor and patient is different from the Western countries. Relations in countries in Asia over interpreted how doctors behave and maintain a polite and friendly attitude, is not judged by the way doctors communicate. This is the difference with state Barat[15]. There are high enough gaps in education levels between patients and doctors were also influential in shaping the critical patient. Data from the Board Statistics Centre of Indonesia stated that approximately half of the population of Indonesia has a level of education which does not reach the level of secondary school education (junior).[15]

In determining the diagnosis of patients, residents decide based on the history and reinforced by the results of the further examination. Before conducting investigations, resident only give definite therapy. This is because the hospital RSMH type A which is very comprehensive audit tool. Resident also revealed that the investigation is needed in order to be targeted treatment.

Gender differences in resident affect the way residents communicate. In resident women, more often showed a response verbally and non-verbally that is rarely found in the resident male. Doctor with female gender communication longer (2 minutes longer than the male practitioners), giving a more positive statement, more friendly, providing more questions, giving feedback to the patient's complaints, and smile and nod more often.[9]

Differences in ethnicity/race among resident does not affect communication in Internal Medicine Department. It remains consistent in dealing with all patients despite the ethnic differences. However, the difference among the resident with patients, especially differences in language, affect the way residents communicate with the patient, but not necessarily be fatal.

Differences in level of education affects communication. Due to the more experience, chief of residents have better communication skills in comparison to their juniors.

Conclusions

In conclusion, communication skills that are included in Simplified Checklist Calgary Cambridge Guide is done poorly by residents of Internal Medicine Department of Mohammad Hoesin Hospital. Factors that contribute were the heavy patient load, time pressure, and exhaustion.

In order to improve the communication skills, residents are adviced to follow seminars and training related to communication. Trainings and seminars can be held by the hospital. The executives of the hospital are adviced to reevaluate the duration of work time. Further research on communication skills among residents are still needed.

Acknowledgement

The authors would like to show our gratitude to the teaching staff of the Department of Public Health and Community Medicine, Faculty of Medicine, Sriwijaya University.

References

1. Kurtz S, Silverman J, Drapper J. Teaching and Learning Communication Skills in Medicine. Oxon: Radcliffe Medical Press.1998.

2. Middleton S, Gattellari M, Harris JP, et al. Assessing Surgeons' Disclosure of Risk Information Before Carotid Endarterectomy. ANZ J Surg. 2006; 76 (7): 618–24.

3. Jennifer, FH, Dip SA, Longnecker N. Doctor-Patient Communication: A Review. Ochsner J. 2010; 10: 38-43.

4. Subijanto AA. Peran komunikasi Dalam Menjalankan Profesi Dokter Yang Berkualitas Di Masyarakat. Univ Sebelas Maret. 2009.

5. Duffy FD, Gordon GH, Whelan G, et al. Assessing competence in Communication and Interpersonal Skills: “The Kalamazoo II report”. Acad Med.

6. Jahan F, Muhammed M, Mark N, et al. Comparison of The Medical Students’ Self-assessment and Simulated Patients Evaluation of Students Communication Skills in Family Medicine Objective Structured Clinical Examination (OSCE). MEJFM. 2014; 12 (9).

7. Herquanto E. Basuki S. Jauzi M, dkk. Pengetahuan dan Keterampilan Komunikasi Dokter Pasien dan Faktor- Faktor yang Memengaruhinya. J Indon Med Assoc. 2011; 61 (5).

8. Ibrahim A, Delia ZI, Asuku M,dkk. Communication Skills among Surgical Trainees: Perception of Residents in a Teaching Hospital in Nothern Nigeria: Niger J Surg. 2011;17 (1).

9. Roter DL, Hall JA. Physician Gender and Patient-Centered Communication: A Critical Review of Empirical Research. Annu Rev Publ Health 2004; 25: 497-519

10. Hall JA, Irish JT, Roter DL. Gender in Medical Encounters : An Analysis of Physician and Patient Communication in A Primary Care Setting. Health Psyschol.1994;13(5): 384-92.

11. Leonard EE. Race, Ethnicity, Culture, and Disparities in Health care. J Gen Intern Med. 2006; 21(6): 667-9.

12. Collins TC, Clark JA, Petersen L, et al. Racial Differences in How Patients Perceive Physician Communication Regarding Cardiac Testing. Med Care. 2002; 40 (1 Suppl):127-34

13. Pawito. Penelitian Komunikasi Kualitatif. PT. LKiS Pelangi Aksara, Yogyakarta. 2007.

14. Bensenor IM. Do you believe in the power of clinical examination? The answer must be yes!. San Paulo Med. 2003; 121[6]: 223

15. Claramita M, Adi U, Hardyanto S, et al. Doctor-patient communication in a Southeast Asian setting: the conflict between ideal and reality. Adv in Health Sci Educ. 2011; 16: 69-80

16. Hillen HCB.The IT anamnesis? Diagnosing software requiremnets. Radboud University Njimegen. June 25, 2012.

17. Jamie AG, Alda MG, Elan DC, et al. Addressing health literacy through clear health communication: A training program for internal medicine residents. Patient Education and Counseling 95. 2014; 76-82.

18. Lacasse M & Maker D. Fishing and history taking. Canadian Family Physician. Le Medecin de familie canadien, 2008; 54 (6): 891–2.

19. Roshan R, Rao AP. A study of relative contribution of the history, physical examination and investigations in making medical diagnosis. J Assoc Physici India. 2000; 48(8):771-5.

20. Consumer Health Forum of Australia.Informed Consent in Heatlhcare: An Issues Paper.2013.

21. Queensland Health. 2011. Guide to Informed Decision-making in Healthcare.

22. Sulaiha SA, Wee YL, Lie JC, et al. The lack Of effective hand washing practice despite high level of knowledge and awareness in medical students of clinical years. IEJSME. 2010; 4(2): 18-26.

23. Lynn NB.Health literacy: a prescription to end confusion. committee on health lieracy, board on euroscience and behavioral health. Washington DC: The National Academies Press. 500 Fifth Street,NW. 2001.

24. Robin JD. Can meds communication skills: can they be taught?. MAC Ortho Grand Rounds Dec. 2011.

25. Silverman J, Kurtz S, Draper J. Skills for communicating with patients. 2nd Ed . Oxon,UK: Radcliffe Publishing.2005.

26. Cohen M. Vick K, Tim B,et al. Long consultation and quality of care: AIMA position statement. Australasian Integrative Medicine Association 19 2012; 19-22

27. Howie JGR, Heaney DJ, Maxwell M, et al. Quality at general practice consultations: cross-sectional survey. BMJ. 1999; 319: 738 743.

28. Ellis, C. The doctor and medical student's perspectives of the doctor-patient relationship: an analysis of communication. Int J Commun and Health. 2013;1

29. Deveugele M, Anselm D, Atie VB. Consultation length in general practice: cross sectional study in six European countries. BMJ. Aug31, 2002; 325(7362): 472.

30. Wilson, A. Susan, C. The relationship between consultation length, process and outcomes in general practice: a systematic review. BrJ of Gen December 2002. 52(485Pract,):1012-20.

Appendix

Table 1. The criteria of inclusion Informant

Informant	Frequency (n)
chief resident (resident who already exists in the second half of the end).	1
junior resident (resident who just entered the part less than 2 years / still in the early semester).	1
Male	1
Female	1
Palembang	1
Outside Palembang	1

Table 2. Biodata Expert

Name	Affiliation	departement	coresspondence
Dr. dr. H. Mohammad Zulkarnain, M.MedSc, PKK	Faculty of medicine, Sriwijaya Universitas	Department of Public Health / Family Medicine	Jl. Moch. Ali Komp. RSMH Palembang 30126 , Tlp. / Fax. 0711316671 email : septi_2003@yahoo.com
dr. Hj. Mariatul Fadilah, MARS	Faculty of medicine, Sriwijaya Universitas	Department of Public Health / Family Medicine	Jl. Moch. Ali Komp. RSMH Palembang 30126 , Tlp. / Fax. 0711316671, email : mariatulfadilah@yahoo.com
dr. Kemas Yakub Rahadiyanto, Sp. PK., M.Kes	Faculty of medicine, Sriwijaya Universitas	Department of Clinical Pathology	Jl. Moch. Ali Komp. RSMH Palembang 30126 , Tlp. / Fax. 0711316671, email : Yakubhusin@gmail.com
dr. Asmarani Makmun, M.Kes	Faculty of medicine, Sriwijaya Universitas	Department of Public Health / Family Medicine	Jl. Moch. Ali Komp. RSMH Palembang 30126 , Tlp. / Fax. 0711316671, email : asmaranimuchtar@yahoo.com
dr. Novadian, Sp.PD, FINASIM	Faculty of medicine, Sriwijaya Universitas	Subdivision Kidney Hypertension Division of Internal Medicine	RSUP Dr Mohammad Hoesin Palembang, email : novadiandrnfairuz@yahoo.com
dr. Rizma Adlia Syakurah, MARS	Faculty of medicine, Sriwijaya Universitas	Department of Public Health / Family Medicine	Jl. Moch. Ali Komp. RSMH Palembang 30126 , Tlp. / Fax. 0711316671, email : rizmaadlia@gmail.com
dr. Indri Seta Septadina, M.Kes	Faculty of medicine, Sriwijaya Universitas	Department of Anatomy	Jl. Moch. Ali Komp. RSMH Palembang 30126 , Tlp. / Fax. 0711316671, email : indri.andriansyah@gmail.com
dr. Puji Rizki Suryani	Faculty of medicine, Sriwijaya Universitas	Department of Mental Medicine	Jl. Moch. Ali Komp. RSMH Palembang 30126 , Tlp. / Fax. 0711316671, email : prizki.suryani@gmail.com

Table 3. Observation Results

Kode *Checklist*	Informan					
	I1 Residen A	I2 Residen B	I3 Residen C	I4 Residen D	I5 Resdien E	I6 Residen F
01	✓*	×	✓	✓	✓	✓
02	×	×	×	×	×	✓
03	✓	✓	✓	✓	✓	✓
04	✓	✓	✓	✓	✓	✓
05	✓	×	×	✓	✓	✓
06	✓	×	×	✓	✓	✓
07	✓	✓	✓	✓	✓	✓
08	✓	✓	✓	✓	✓	✓
09	✓	✓	✓	✓	✓	✓
10	✓	✓	✓	✓	✓	✓
11	✓*	×	✓*	✓	✓*	✓
12	✓	✓	✓	✓	✓	✓
13	✓	✓	✓	✓	✓	✓
14	×	×	×	✓	✓	✓
15	×	×	✓	✓	✓	✓
Waktu rerata	10 menit/ pasien	9 menit/ pasien	13 menit/ pasien	15 menit/ pasien	12 menit/ pasien	11 menit/ pasien

Table 4. *CALGARY CAMBRIDGE GUIDE*

INITIATING THE SESSION	
	Establishing Initial Rapport
1.	Menyapa pasien dan menanyakan nama pasien.
2.	Memperkenalkan diri dan menjelaskan tujuan dari anamnesis, mendapatkan persetujuan jika diperlukan.
3.	Mengidentifikasi masalah pasien dengan diawali kalimat pembuka yang tepat.
GATHERING INFORMATION	
4.	Mengkombinasikan pertanyaan terbuka dan pertanyaan tertutup.
5.	Menanggapi masalah pasien dengan memberikan respon secara verbal dan non-verbal (penggunaan kalimat yang men-support, keheningan sejenak,paraphrase, meng interpretasi)
6.	Menunjukkan bahasa isyarat secara verbal dan non-verbal (Bahasa tubuh, ucapan, ekspresi wajah)
PROVIDING STRUCTURE TO THE CONSULTATION	
7.	Mewawancarai pasien secara sistematis
8.	Memastikan pembicaraan tetap sesuai jalur
BUILDING RELATIONSHIP	
9.	Menunjukkan perilaku non-verbal yang tepat - Kontak mata,ekspresi wajah - Postur,posisi dan gerakan - Intonasi,volume dan kecepatan nada bicara
	Developing Rapport
10.	Menerima legitimasi berdasarkan pandangan dan perasaan pasien ; tidak menghakimi pasien
11.	Selama proses pemeriksaan fisik, meminta izin dan menjelaskan apa yang akan dilakukan

EXPLANATION AND PLANNING	
12.	Menggunakan Bahasa yang ringkas,gampang dimengerti,hindari pemakaian istilah medis.
13.	Melakukan negosisasi dengan rencana yang akan dibuat - memberikan alasan terhadap pilihan yang dipilih diantara pilihan lainnya - Memberikan pilihan lain kepada pasien
14.	Menanyakan kembali dengan pasienb -apakah rencana disetujui -apakah keluhan pasien telah ditangani
CLOSING THE SESSION	
15.	Menjelaskan kemungkinan hasil yang tidak diinginkan ,apa yang akan dilakukan jika tidak sesuai harapan, kapan dan bagaimana harus mencari bantuan.

How Much Depressed are Lung Tuberculosis Patients in Tangerang, Banten Province, Indonesia?

Tirta Darmawan Susanto[1], Engelbertha Pardamean[2], Vinsensa Annabella[3], Mark[3], Amelia Gianina Widjaja[3]

[1] Pharmacology Department Faculty of Medicine, University of Pelita Harapan
[2]Psychiatric Department Faculty of Medicine, University of Pelita Harapan
[3]Medical Student Faculty of Medicine, University of Pelita Harapan

Citation : Susanto TD, Pardamean E, Annabella V, Mark, Widjaja AG. How Much Depressed are lung Tuberculosis Patients in Tangerang, Banten Province, Indonesia? Medicinus. 2019 June; 7(6):195 – 198
Keywords : Tuberculosis, Depression, Lung
***Correspondance :** Tirta Darmawan Susanto Pharmacology Department Faculty of Medicine, University of Pelita Harapan
E-mail : tirta.susantoi@uph.edu
Online First : June 2020

Abstract

Introduction : Tuberculosis is an infectious disease caused by Mycobacterium Tuberculosis (MTB) and mostly attacks the lung and other organs. In patients with pulmonary tuberculosis, depression can occur and the factors that can cause it are age, sex, marital status, level of education, emplyment, long suffering from pulmonary tuberculosis and comorbidities. The purpose of this study is to show the prevalence and also degree of depression in patients with lung Tuberculosis in Tangerang, Banten Province, Indonesia.

Methods : The study design is cross sectional by asking participants to fill Zung Self-Rating Depression Scale that have been translated to Indonesian language. Participants were 129 patients with lung tuberculosis in Siloam General Hospitals Lippo Karawaci, Puskesmas Kutai and Puskesmas Curug.

Results : Mean age of the 137 patients with lung tuberculosis is 47.73 $\pm$ 8.50 years old, and the mean of their height and weight are 163.94$\pm$ 7.59 centimeters and 51.10 $\pm$ 7.40 kilograms. More than a half of the patients are male (69%), almost a half of the patients are low educated (48%) and almost all of the patients have been married (93.8%). More than a half of the lung tuberculosis patients experience deppression (70,5%). Approximately a half of the lung tuberculosis patients are having mild depression (50.4%). There is 1 patient is having severe depression (0.8%).

Conclusion : Degree of depression in adult patients suffer from lung Tuberculosis in Tangerang, Banten Province, Indonesia is high. More than a half of adult lung Tuberculosis patients are having depression. Depression is one of problems that should be concerned and also treated in patients with lung tuberculosis. Psychiatrist involvement in managing patients with lung tuberculosis is needed.

Introduction

Tuberculosis (TB) is an infectious disease that caused by *Mycobacterium tuberculosis* and cause many deaths worldwide. According to World Health Organization (WHO) Global Tuberculosis Report 2017, TB cause 1,3 million deaths among people without Human Immunodeficiency Virus (HIV) infection and 374.000 deaths among people with HIV. WHO also reported that TB reach ninth position as the leading cause of Many efforts have been done to increase adherence to tuberculosis treatment, but death worldwide. This rank is above HIV[(1)].

An estimated 10.4 million people suffered from TB in 2016[(1)]. South-East Asia Region ranks 1st with the highest number of cases (45%) followed by African region (25%), Western Pacific Region (17%), and others (13%). Indonesia accounted a total of 360.565 of the TB cases. It shows increasing incidence when compared to reported cases from 2015[(2)].

the default from tuberculosis treatment is still high [(3)]. Psychopathology is the major

burden for treating lung tuberculosis patients because it will greatly reduce patient's adherence to the long - term tuberculosis treatment. Patchi., et al 2013[4], wrote that one of psychiatric problems that usually suffered by tuberculosis patients is mood disturbance including depression. Depression and anxiety can be found in 46 % - 72% of tuberculosis patients [4]. Depression often coexist with TB [5]. The prevalence of depressive episode among TB patients from the data of World Health Survey was 23.7%[6]. Additionally, in research conducted by Nahda., et al 2017[7], 51.9% of TB patients experienced depression from 27 patients in Semarang, Indonesia. Research to find the prevalence and degree of depression experienced by patients with lung tuberculosis in Tangerang, Banten Province, Indonesia has not been done before. Knowledges about the prevalence and degree of depression that are suffered by lung tuberculosis patients in Tangerang, Banten Province can be used as a specific foundation to recommend the involvement of psychiatrists or psychologists in managing tuberculosis patients in order to increase treatment adherence and achieve successful treatment in tuberculosis patients.

Materials and Methods

This study was approved by Pelita Harapan University Ethical Committee. The study design of this study is cross sectional by asking participants to fill Zung Self-Rating Depression Scale that have been translated to Indonesian language. Participants included were 129 lung tuberculosis patients in Siloam General Hospitals Lippo Karawaci, Puskesmas Kutai and Puskesmas Curug. Informed consents were given and Zung Self-Rating Depression Scale questionnaires were filled by patients that have agreed to be participated in this study.

Inclusion criteria for the patients included in this study are 17 – 66 years old male or female patients with lung tuberculosis who stay in Tangerang and are receiving Tuberculosis drugs regiment therapy. Exclusion criteria in this study are male or female patients who did not agree to participate in this study, and also pregnant female patients.

Other data collected from the patients were gender, age, weight, height, educational status, and marital status. All data collected by interviewing the patients.

Data were analysed using IBM SPSS Statistics version 23. Numeric variable were presented as average and standard devation and categoric variable were presented as percentage.

Results

Mean age of the 137 patients with lung tuberculosis is 47.73 $\pm$ 8.50 years old, and the mean of their height and weight are 163.94$\pm$ 7.59 centimeters and 51.10 $\pm$ 7.40 kilograms. More than a half of the patients are male (69%), almost a half of the patients are low educated (48%) and almost all of the patients have been married (93.8%). For complete proportion please see table 1 and table 2.

Screening process using Zung Self-Rating Depression Scale shows that more than a half of the lung tuberculosis patients experience deppression (70,5%). Approximately a half of the lung tuberculosis patients are having mild depression (50.4%). There is 1 patient is having severe depression (0.8%). (See table.3).

Table 1. Physical Characteristics of Patients with Lung Tuberculosis

Characteristics	N	Mean	SD	Minimum	Maximum
Age (years)	129	47.73	8.50	22	66
Height (cm)	129	163.94	7.59	143	190
Weight (kg)	129	51.10	7.40	34	94

Table 2. Demographic of Patients with Lung Tuberculosis

Sex		
Male	89	69.0%
Female	40	31.0%
Educational Status		
Low	62	48.1%
Middle	46	35.7%
High	21	16.3%
Marital Status		
Married	121	93.8%
Single	8	6.2%

Table 3. Degree of Depression

Degree of Depression	N	(Percent)
Normal	38	(29.5)
Mildly Depressed	65	(50.4)
Moderately Depressed	25	(19.4)
Severely Depressed	1	(0.8)
Total	129	(100.0)

Discussion

Some psychiatric problems experienced by patients with tuberculosis are mood disorders (e.g. major depression), and anxiety disorder. Prevalence of depression and anxiety in tuberculosis patients are 46% - 72%. The more serious patient's clinical condition, the prevalence of depression and mood disorder will be increased [4]. In this research we found that 70,5% of the lung tuberculosis patients in Tangerang, Banten Province, experience depression. Approximately a half of the lung tuberculosis patients are having mild depression (50.4%) and there is 1 patient is having severe depression (0.8%). The prevalence is almost the same with that have been found in the previous research in Athens.[4] This result is also similar to research results in Pakistan [8] and Semarang [7] where more than half of tuberculosis patients experienced depression.

Psychosocial and psychiatrics complication will increase default in tuberculosis treatment [9]. Psychopathology is the major burden for treating lung tuberculosis patients because it will greatly reduce patient's adherence to the long - term tuberculosis treatment [4]. In our research we found that the prevalence of depression is high in tuberculosis patients in Tangerang, Banten Province. Psychiatrists and psychologists should be involved to treat the psychiatric problems in tuberculosis patients in order to reduce default in long term tuberculosis treatment. Psychiatrists and psychologists should be involved from the beginning of the treatment and followed by monthly evaluation [9].

The limitations of this research are 1) only 3 centres involved, Siloam General Hospitals Lippo Karawaci, Puskesmas Kutai and Puskesmas Curug, 2) although it is a self-reported questionnaire, the Zung questionnaires in this research administrated by medical students, not by psychologists nor psychiatrist, and 3) the Zung questionnaires in this research administrated at clinics and hospitals environment, not at quiet and special designated environment.

Conclusion

More than a half of the lung tuberculosis patients experience depression in Tangerang, Banten province. High prevalence of depression will make the default risk in tuberculosis treatment also higher. Psychiatrists and psychologists should be involved to treat the psychiatric problems in tuberculosis patients.

References

1. World Health Organization. Global tuberculosis report 2017. 2017.

2. Kementrian Kesehatan Republik Indonesia. Profil Kesehatan Indonesia Tahun 2015. 2016

3. Janmeja AK, Das SK, Bhargava R, Chavan BS. Psychotherapy Improves Compliance with Tuberculosis Treatment. Respiration. 2005;72(4):375-80.

4. Patchi A, Bratis D, Moussas G, Tselebis A. Psychiatric Morbidity and Other Factors Affecting Treatment Adherence in Pulmonary Tuberculosis Patients. Tuberculosis Research and Treatment. 2013;2013:1-37.

5. Sweetland A, Oquendo M, Wickmaratne P, Weissman M, Wainberg M. Depression: a silent driver of the global tuberculosis epidemic. World Psychiatry. 2014;13(3):325-6.

6. Koyanagi A, Vancampfort D, Cavalho AF. Depression comorbid with tuberculosis and its impact on health status: cross-sectional analysis of community-based data from 48 low- and middle-income countries. BMC Med. 2017;15:209.

7. Nahda ND, Kholis FN, Wardani ND. Faktor-faktor yang berpebgaruh terhadap kejadian depresi pada pasien tuberkulosis di RSUP DR. Kardiadi Semarang. Jurnal Kedokteran Dipenogoro. 2017;6:4.

8. Amreen, Rizvi N. Frequency of Depression and Anxiety among Tuberculosis Patients. Journal of Tuberculosis Research. 2016;4:4.

9. Vega P, Sweetland A, Acha J, Castillo H, Guerra D, Fawzi S, et al. Psychiatric issues in the management of patients with multidrug-resistant tuberculosis. International Journal of Tuberculosis and Lung Disease. 2004;8(6):749-759.

Case Series : Operative vs Non-Operative Management in Grade III Pancreatic Injury

Irawan A[1] , Clinton[2] , Sutanto D[3] , Agustina F[3]

[1]Departement of Surgery Faculty of Medicine, University of Pelita Harapan Siloam Hospital Lippo Village
[2] Faculty of Medicine, University of Pelita Harapan
[3,4] Department of Pediatric Surgery, University of Pelita Harapan, Siloam General Hospital Lippo Village, Tangerang, Indonesia.

Citation : Irawan A, Clinton, Sutanto D, F Agustina. Case Report : Operative vs Non-Operative Management in Grade III Pancreatic Injury
Medicinus. 2019 June; 7(6):199–204
Keywords : Pancreatic trauma, Distal Pancreatectomy, Conservative, Pseudocysts
***Correspondance** : Andry Irawan, Surgery Department, Siloam Hospital Lippo Village Faculty of Medicine, University of Pelita Harapan, .
E-mail : andry.irawan@uph.edu
Online First : June 2020

Abstract

Introduction: Pancreatic injury is a rare case, caused by blunt or sharp trauma. Difficulty in making diagnose on pancreatic trauma cases are associated with high mortality, and the treatment can be either operative or conservatively. However, It is still unclear which treatment is more favorable.

Case: We present 2 cases of Grade III pancreatic injury with stable hemodynamic who suffered bicycle accident. First case, 12-year-old boy complaining severe pain on the upper left abdomen (VAS 9-10) and get worsening by time, with vomiting. The patient underwent distal Pancreatectomy-Splenectomy. Second case, 8-year-old boy complaining of pain on the upper left abdomen (VAS 6-7) without extension on whole abdominal region with vomiting and fever. The patient was treated conservatively. In both cases, patient was discharged with improvement. However, about 3 months later patients who were treated conservatively developed into a pseudocyst.

Conclusion: The selection of management in grade III pancreatic injury can be operative or conservative depending on clinical findings such as hemodynamic condition and the quality of abdominal pain. But the occurrence of pseudocysts pancreas is another surgical challenge.

Introduction

Blunt pancreatic trauma is a rare case and occurs in less than 5% of all cases of blunt abdominal trauma. [1,2,3,4] Blunt pancreatic trauma occurs because of a compression by large external forces that hits the upper abdomen resulting in an emphasis on the pancreas in the retroperitoneal cavity against the lumbar vertebrae.[5] Blunt pancreatic trauma can appear without clinical manifestations at all, accompanied by the results of normal serum amylase, especially in the acute phase. [1] Therefore, many cases of blunt pancreatic trauma are difficult to diagnose and don't get prompt treatment. Therefore, cases of pancreatic trauma are associated with a high mortality rate of between 9% and 34%. [7]

High mortality is associated with complications in cases of pancreatic trauma. Complications that often occur in cases of pancreatic trauma are the formation of a pseudocyst, traumatic pancreatitis, and pancreatic abscess. Other rare complications include peritonitis, gastrointestinal bleeding, and splenic venous thrombosis.[1] Cases of pancreatic trauma must be treated quickly. Modalities of treatment depend on the state of clinical presentation, hemodynamic state, degree of injury, location of pancreatic parenchymal damage, the integrity of the pancreatic duct and damage to surrounding organs. In these two cases of grade III, blunt pancreatic trauma was presented due to a bicycle accident. However, management in both cases is different, namely operatively and non-operatively.

In the case discussion, we will discuss which treatment is more recommended and how to choose the treatment between operatively and non-operatively.

Case 1

A 12-year-old boy is brought to an emergency department with complaints of unbearable pain in the upper left abdomen because of hitting a bicycle handle, accompanied by vomiting from one day before admitted to the hospital. The patient had gone to the nearest clinic and was given pain killer medication but there was no improvement. The patient does not complain of fever. Vomiting has more than 5 times a day. The pain was getting worse and he was taken to the emergency room on the second day. With a VAS score of 9-10. On physical examination, he was alert and conscious (compos mentis), blood pressure 120/80 mmHg, pulse 120 x / min, breath rate 30x / minute, temperature 37.0 ^{o}C. The abdominal examination found redness of 2 x 2 cm with left hypochondriac tenderness with defans muscular. Laboratory tests found white blood cells 15.16 103 / ul; amylase 617 U / L; lipase 671 U / L. Contrast abdominal CT Scan was performed with lacerations with a hematoma in the pancreatic tail region, with the free fluids on peri-pancreatic, peri-splenica, left side abdomen and periphery with other intra-abdominal organs within normal limits.

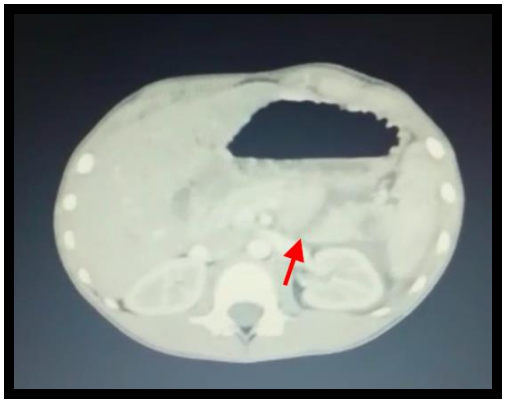


Fig 1. Contrast of Abdomen CT Scan; laceration with hematoma in the tail region of the pancreas, with free fluid in peripancreatica, perisplenika, left side abdomen and perivesika.

Patients undergo laparotomy exploration in general anesthesia. Pancreatic identification showed a partial laceration of about 50% in the pancreatic tail, no pancreatic ducts were seen, saponification was limited to around the lesion. Performed distal pancreatectomy with splenectomy.

Postoperatively, patients were admitted to the ICU for 2 days and have extubation after 24 hours postoperatively. Patients were given antibiotics Ceftriaxone 3x1gr IV and Metronidazole 1x1gr IV. The patient was discharged in good condition after 7 days post-operative. Patient has a good condition after 3 months of control.

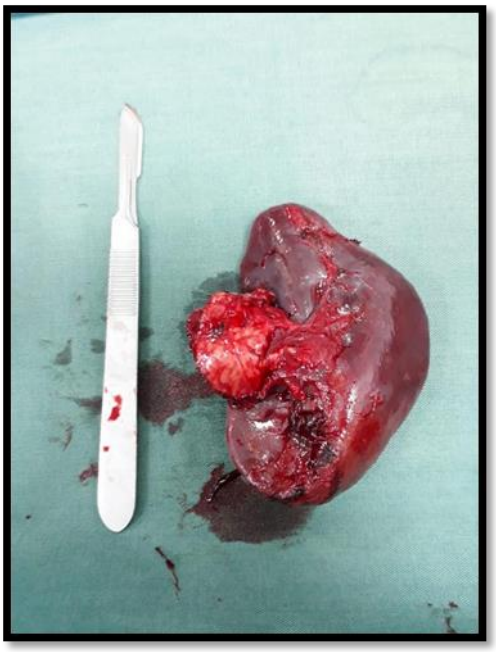


Fig 2. Parts of the distal / tail of the pancreas and spleen.

Case 2

8 years old boy, comes to the emergency department due to a bicycle accident with complaints of pain in the entire abdomen accompanied by vomiting more than 10 times a day since 1 day before admitted to the hospital. Complaints of abdominal pain start from the upper left side of the abdomen and dispersed to the entire field of the stomach. The patient complained of fever and had taken anti-pyretic and pain killer but there was no improvement. With the VAS score 6-7.

On physical examination he was alert and conscious, blood pressure 110/70, pulse 110x / minute, breathing rate 24x / minute, temperature 36.9 ^{o}C. On abdominal examination, redness is found in the left hypochondriac with defans muscular. Laboratory tests obtained white blood cells 32.00 103 / ul; amylase 1038 U / L; lipase 1178 U / L. Contrasted abdominal CT Scan was performed with pancreatic lacerations and hematoma in the suspected pancreatic parenchyma body regarding the ductus pancreaticus with surrounding free fluid and it was found a blurry suspect of laceration line on spleen with free fluid around it. Free fluid in perihepatic, between intraabdominal intestines, perivesica with multiple mesenteric lymphadenopathies in the middle abdomen diameter +/- 0.5-0.68cm.

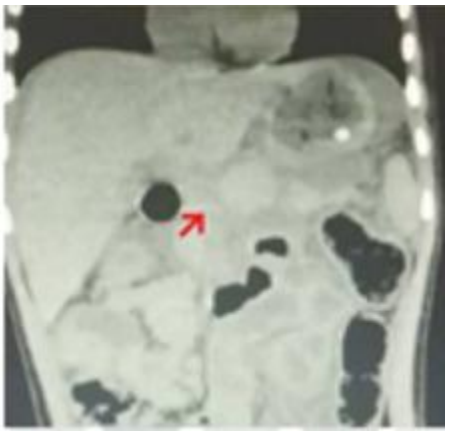


Fig 3. Contrast abdominal CT obtained from pancreatic laceration and hematoma in the suspicious pancreatic parenchyme body regarding the ductus pancreaticus with surrounding free fluid and found to be suspected of a faint laceration line in spleen with free fluid around it.

Early treatment of the patient is strict vital signs control for 24 hours per 30 minutes. Complete peripheral blood test every 6 hours, 12 hours, 24 hours. Given 1000cc Lactate Ringer liquid. A urine catheter and a nasogastric tube are attached with a production of yellowish 50cc. Followed by 500cc / 8h of Ringer Lactate fluid, Ceftriaxone injection of 2 x 1 gr, Ketorolac 3 x 10 mg, Vit K injection of 1 x 10 mg, and transfusion of 250 cc Red Cell Pack. Patients are treated conservatively for 8 days of treatment without an ICU and the patient is discharged with repair conditions. Two months later, the patient came with the results of a pancreatic pseudocyst CT scan measuring 8.84 x 11.75 x 14.6 cm. Patients underwent cystoenterostomy surgery.

Discussion

Blunt pancreatic trauma is a rare case and occurs in less than 5% of all cases of blunt abdominal trauma. [1,2,3,4] The mechanism of trauma in most pediatric patients with blunt pancreatic trauma is due to motor vehicles accident followed by bicycle accidents due to hitting tip of the handlebar.[5] Diagnosis and initial management reduce the mortality rate of patients.[13]

Fig 4. CT abdominal scan 2 months when the control patient described a pancreatic pseudocyst measuring 8.84 x 11.75 x 14.6 cm.

Make a diagnosis of pancreatic trauma is not easy because it often appears without specific clinical manifestations, accompanied by normal serum amylase results especially in the acute phase.[1] In both cases, the above patients experienced misdiagnosis in the first twenty-four hours. The patient had been treated at the clinic but there was no improvement. Twenty-four hours later the symptoms of abdominal pain worsen with nausea and vomiting, the physical examination found defans of muscular with increased amylase results. Many cases of pancreatic trauma are not immediately identified/misdiagnosed and do not get immediate treatment. Therefore cases of pancreatic trauma have a high mortality rate of between 9% and 34%.[7] Delay in diagnosis for 6-12 hours increases mortality and morbidity.[8,9]

Diagnosis of pancreatic trauma cannot only be from clinical findings, but must include laboratory results, ultrasound imaging, and contrast abdominal CT scan.[1,14,15] Takishima et al and Mayer et al stated that there was a significant relationship between serum amylase with pancreatic trauma.[10,11] Simon et al and Holmes et al specifically found the relationship in the study, 90% of serum amylase and 95% of serum lipase are increased in patients with pancreatic trauma.[12]

Contrast CT scans are the gold standard for diagnosing but their sensitivity and specificity change depending on the onset of trauma. In the first twelve until twenty-four hours after trauma, pancreatic laceration cannot be seen on contrast abdominal CT Scan. Therefore, it is highly recommended to repeat the CT scan after the next 24 hours in the cases with high suspicion of pancreatic trauma but initial CT scan result was negative,.[1,14-17, 19,20]

Pancreatic trauma is grading by its severity (I-V). Each treatment selection must be reviewed based on the grading of the trauma. The grading of pancreatic trauma has been determined by the American Association for Surgery in Trauma. [1]

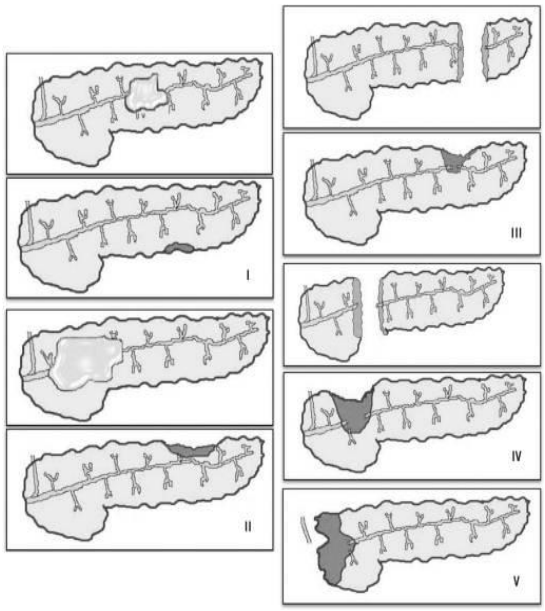


Fig 5. [1] Classification of the severity of pancreatic trauma. Grade I - mild contusion or laceration without accompanying ductal trauma, degree II - severe contusion or laceration without accompanied ductal trauma, grade III - severe transection or laceration with ductal distal pancreatic disorders, grade IV Transection of the proximal part of the pancreas or severe laceration with participation trauma to the ampulla, degree V - Very severe disturbance of the head of the pancreas.

Base on the grading, conservative management have been approved as the main choice in management of grade I and II. In grade III-V , main choice of management becomes less clear and causes controversy. In our both cases are third-grade blunt pancreatic trauma, which according to several literature studies requires distal pancreatectomy and drainage splenectomy. But also many literature start to studied on conservative treatment on patient with third and fourth grade pancreatic trauma.

Ravinder Pal Singh et al stated in their study that pancreatic trauma with third-degree had a good prognosis if immediate operative action was taken. [25] Some cases support conservative treatment on third and fourth degree pancreatic trauma, but with some agreement such as patients with stable hemodynamics, without other organ injuries, and have experts with facilities for endoscopic action (sphincterotomy, stenting, necrosectomy and internal drainage of pseudocysts and percutaneous image-guided drainage. [6,18-24] In addition, adequate nutrient intake, intravenous fluids, and appropriate analgesia are essential at conservative treatment in patients with third and fourth grade pancreatic trauma. Giving octreotide 50 mcg TID in patients with pancreatic duct disorders can be given especially in post resection of the pancreas for 1 week. [20] Amirata et al reported octreotide acetate can reduce the risk of morbidity associated with pancreatic resection by reducing the output of pancreatic fluid.[26] Due to limited facilities and medicines, octreotide is not used in our cases above.

Patients with progressive, hemodynamic, unstable abdominal pain, abdominal distension with an inability to tolerate enteral intake, need for blood transfusions, persistent leukocytosis (>11), sepsis or organ failure are considered to fail in conservative or non-operative treatment. Organ failure that responds to initial resuscitation is not included in the failure of conservative treatment. Endoscopic or radiological intervention externally for fluid drainage, necrosis or abscess is not considered as failure in conservative treatment. Suman BK et al stated of ten patients have success on conservative management.

Six patients with third-grade, five patients underwent cystoenterostomy endoscopy, one patient underwent an interventional radiology procedure in the form of

installing an external drainage pigtail for twenty-eight days without any sequelae. The other four patients with IV degree pancreatic trauma were treated without abdominal exploration, two patients underwent cystogastrostomy endoscopy, the other two underwent endoscopic drainage for pancreatic necrosis and cystoenterostomy. [20]

Based on the point of view in histopathology, pancreatic pseudocysts can be defined as a fluid-filled cavities originating from the pancreas and enveloped by fibrous walls or inflammatory tissues. Cysts can contain pancreatic juice containing of enzymes amylase, lipase, and zymogens, or can also contain serous fluid free of the protease enzyme if it is not associated with the pancreatic duct. [27] There is an Atlanta classification, made based on the pathogenesis of pseudocyst formation. Aim to guide inappropriate management for cases of pancreatic pseudocysts.

The Atlanta classification system is divided into four parts, namely; [27]

a) Collection of acute fluid, occurs at the beginning of the course of acute pancreatitis and does not have granulomatous tissue walls or connective tissue; b) Acute pseudocyst, a consequence of acute pancreatitis or trauma, a cavity surrounded by connective or granulomatous tissue; c) Chronic pseudocysts, arising in chronic pancreatitis and without previous episodes of acute pancreatitis; d) Pancreatic abscess, a collection of intra-abdominal pus near the pancreas with little or no necrosis due to acute or chronic pancreatitis or trauma.

The surgical approach in pseudocyst patient can be indicated with: a) complicated pseudocysts, namely infected and necrotic pseudocysts; b) pseudocysts associated with narrowing of the pancreatic duct and dilated pancreatic ducts; c) cystic neoplasia suspected; d) bile duct stenosis; and e) complications such as abdominal or duodenal compression, perforation and bleeding due to arterial erosion or pseudoaneurysms. [27]

The pseudocyst is a complication of conservative treatment, similar to the case in the second patient who formed a pseudocyst when it came to outpatient treatment after 3 months. In majority, the formed pseudocyst will shrink itself and the use of embolization can reduce the need for sudden surgery and percutaneous drainage can help reduce initial symptoms. Subsequent formation of the pseudocyst can be treated endoscopically or operatively. So in our case, the patient failed conservative treatment because of an exploratory laparotomy, cystoenterostomy for the pseudocyst.

Conclusion

The selection of treatment in cases of third-degree pancreatic trauma is still pros and cons. But with hemodynamics that is stable, the management selection can be through operative or conservative. However, conservative management should have experts and endoscopic/radiological facilities interventions to deal with complications.

References

1. Montalto M., Santoro L., D'Onofrio F., Gallo A., Campo S., Campo V. Endometriosis, need for a multidisciplinary clinical setting: the internist's point of view. Intern. Emerg. Med. 2010;5(6):463–467.

2. Giudice L.C. Clinical practice. Endometriosis. N. Engl. J. Med. 2010;362(25):2389–2398.

3. Macafee C.H., Greer H.L. Intestinal endometriosis. A report of 29 cases and a survey of the literature. J. Obstet. Gynaecol. Br. Emp. 2016;196067:539–555.

4. Ribeiro P.A., Rodrigues F.C., Kehdi I.P., Rossini L., Abdalla H.S., Donadio N. Laparoscopic resection of intestinal endometriosis: a 5-year experience. J. Minim. Invasive Gynecol. 2006;13(5):442–446.

5. Katsikogiannis N., Tsaroucha A., Dimakis K., Sivridis E., Simopoulos C. Rectal endometriosis causing colonic obstruction and concurrent endometriosis of the appendix: a case report. J. Med. Case Rep. 2011;5:320.

6. Al-Talib A., Tulandi T. Intestinal endometriosis. Gynaecol. Surg. 2010;7:61–62.

7. Ribeiro H.S., Ribeiro P.A., Rossini L., Rodrigues F.C., Donadio N., Aoki T. Double-contrast barium enema and transrectal endoscopic ultrasonography in the diagnosis of intestinal deeply infiltrating endometriosis. J. Minim. Invasive Gynecol. 2008;15(3):315–320.

8. Pramateftakis M.G., Psomas S., Kanellos D., Vrakas G., Roidos G., Makrantonakis A. Large bowel obstruction due to endometriosis. Tech. Coloproctol. 2010;14(Suppl. 1):S87–9.

9. Harada T., Momoeda M., Taketani Y., Hoshiai H., Terakawa N. Low-dose oral contraceptive pill for dysmenorrhea associated with endometriosis: a placebo-controlled, double-blind, randomized trial. Fertil. Steril. 2008;90(5):1583–1588

10. Vercellini P., Frontino G., De Giorgi O., Pietropaolo G., Pasin R., Crosignani P.G. Continuous use of an oral contraceptive for endometriosis-associated recurrent dysmenorrhea that does not respond to a cyclic pill regimen. Fertil. Steril. 2003;80(3):560–563.

11. Miller E.S., Barnett R.M., Williams R.B. Sigmoid endometriotic stricture treated with endoscopic balloon dilatation: case report and literature review. Md. Med. J. 1990;39(12):1081–1084.

12. Whelton C., Bhowmick A. Acute endometrial bowel obstruction-a rare indication for colonic stenting. Int. J. Surg. Case Rep. 2013;4(2):160–163.

13. Arafat S., Alsabek M.B., Almousa F., Kubtan M.A. Rare manifestation of endometriosis causing complete recto-sigmoid obstruction: a case report. Int. J. Surg. Case Rep. 2016;26: