I don't want you to be only a doctor but I also want you to be a man
A quotation by His Royal Highness Prince Mahidol of Songkla

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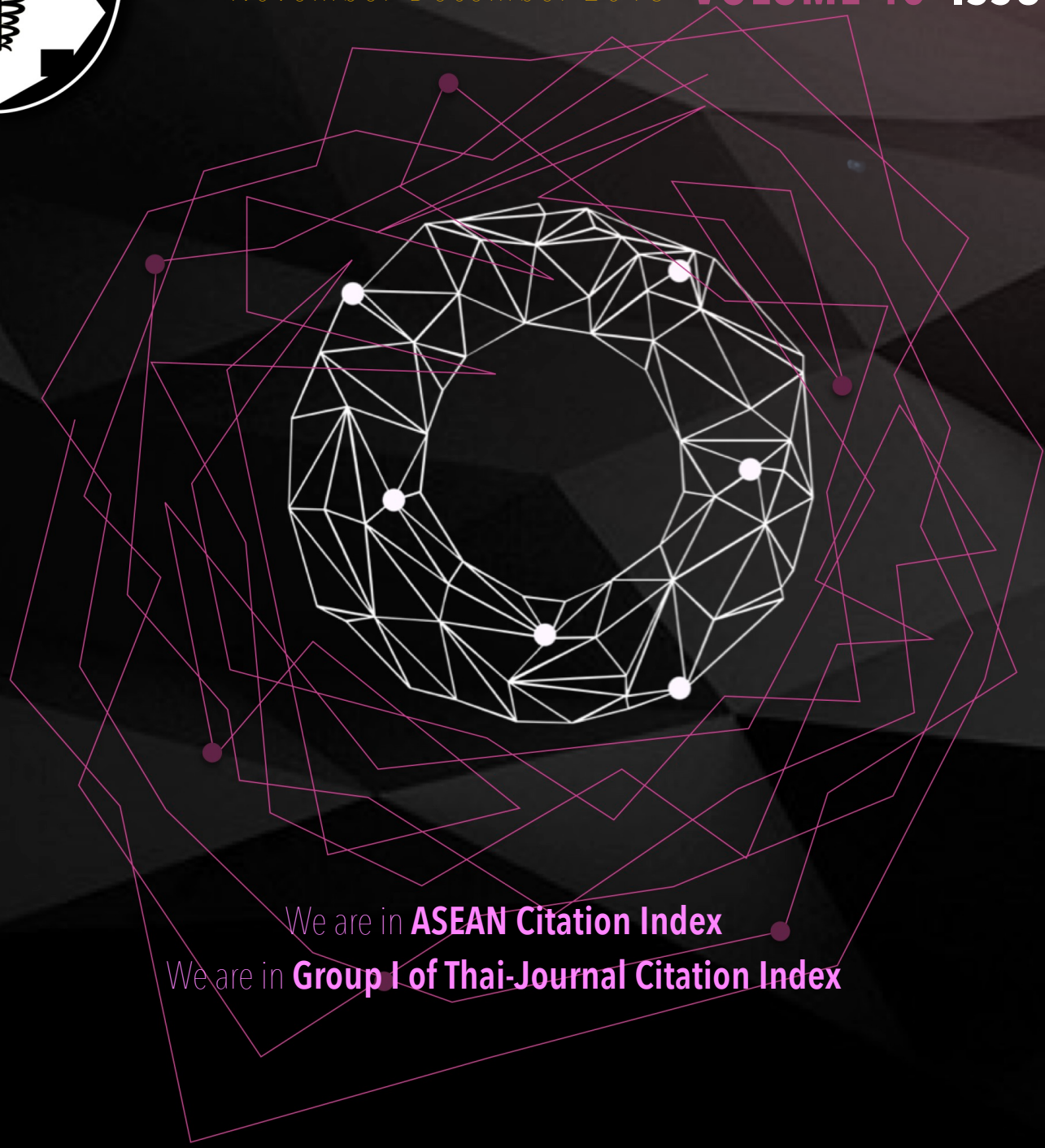

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dominion and strength, power and glory..." (Daniel 2;37)

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Like a thread line of white silk that bonds us together,

so thin, so light, so fragile

until the next sunshine

-Thinwhitelightline

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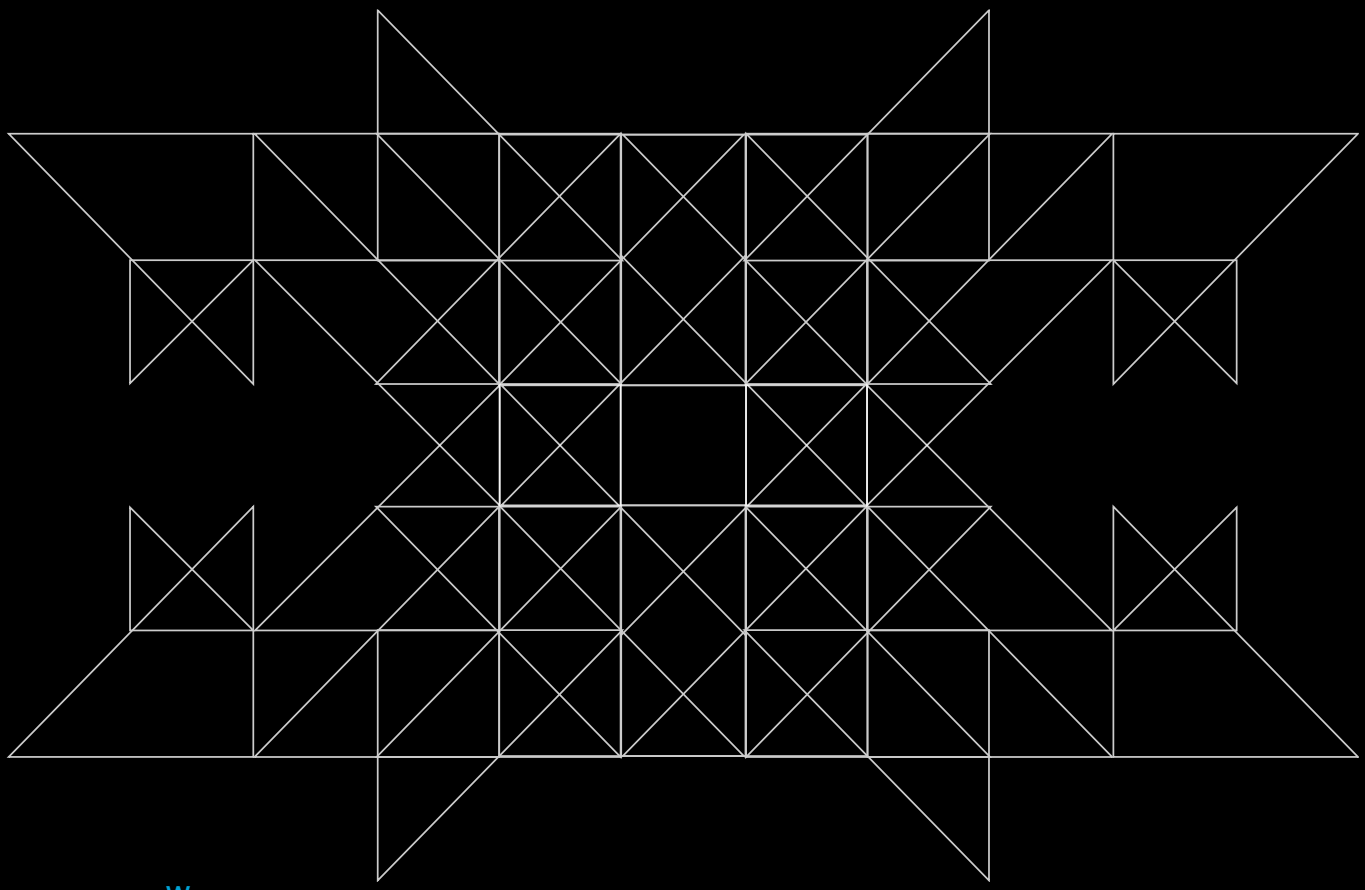

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message from the editor

We are 40, but we are still excited!

Since the dawn of 2016, there have been many changes in our journal, and here is the final issue of this year. Next year our aims are to bring out the best in every research presented in our journal and deliver properly to our audiences are still the same. Every issue in 2017 will be provided together with the format of digital object identifier (DOI). We will be a registered member of Committee on Publication Ethics (COPE). Our editorial team as well as the organization structure will also be changed. Various professionals in the field of medicine and health around the world are invited to be parts of the TCA. Happy New Year and See you soon in 2017

Hope you enjoy reading The Clinical Academia.

Thammasorn Jeeeraaumponwat, M.D., Ph.D.
Editor-in-Chief of The Clinical Academia

Contents

International Committee of Medical Journal Editors (ICMJE)

Recommendation for Preparing for Submission

1. General Principles

The text of articles reporting original research is usually divided into Introduction, Methods, Results, and Discussion sections. This so-called "IMRAD" structure is not an arbitrary publication format but a reflection of the process of scientific discovery. Articles often need subheadings within these sections to further organize their content. Other types of articles, such as meta-analyses, may require different formats, while case reports, narrative reviews, and editorials may have less structured or unstructured formats.

Electronic formats have created opportunities for adding details or sections, layering information, cross-linking, or extracting portions of articles in electronic versions. Supplementary electronic-only material should be submitted and sent for peer review simultaneously with the primary manuscript.

2. Reporting Guidelines

Reporting guidelines have been developed for different study designs; examples include CONSORT for randomized trials, STROBE for observational studies, PRISMA for systematic reviews and meta-analyses, and STARD for studies of diagnostic accuracy. Journals are encouraged to ask authors to follow these guidelines because they help authors describe the study in enough detail for it to be evaluated by editors, reviewers, readers, and other researchers evaluating the medical literature. Authors of review manuscripts are encouraged to describe the methods used for locating, select¬ing, extracting, and synthesizing data; this is mandatory for systematic reviews. Good sources for reporting guidelines are the EQUATOR Network and the NLM's Research Reporting Guidelines and Initiatives.

3. Manuscript Sections

The following are general requirements for reporting within sections of all study designs and manuscript formats.

a. Title Page

General information about an article and its authors is presented on a manuscript title page and usually includes the article title, author information, any disclaimers, sources of support, word count, and sometimes the number of tables and figures.

Article title. The title provides a distilled description of the complete article and should include information that, along with the Abstract, will make electronic retrieval of the article sensitive and specific. Reporting guidelines recommend and some journals require that information about the study design be a part of the title (particularly important for randomized trials and systematic reviews and meta-analyses). Some journals require a short title, usually no more than 40 characters (including letters and spaces) on the title page or as a separate entry in an electronic submission system. Electronic submission systems may restrict the number of characters in the title.
Author information: Each author's highest academic degrees should be listed, although some journals do not publish these. The name of the department(s) and institution(s) or organizations where the work should be attributed should be specified. Most electronic submission systems require that authors provide full contact information, including land mail and e-mail addresses, but the title page should list the corresponding authors' telephone and fax numbers and e-mail address. ICMJE encourages the listing of authors' Open Researcher and Contributor Identification (ORCID).

Disclaimers. An example of a disclaimer is an author's statement that the views expressed in the submitted article are his or her own and not an official position of the institution or funder.

Source(s) of support. These include grants, equipment, drugs, and/or other support that facilitated conduct of the work described in the article or the writing of the article itself.

Word count. A word count for the paper's text, excluding its abstract, acknowledgments, tables, figure legends, and references, allows editors and reviewers to assess whether the information contained in the paper warrants the paper's length, and whether the submitted manuscript fits within the journal's formats and word limits. A separate word count for the Abstract is useful for the same reason.

Number of figures and tables. Some submission systems require specification of the number of Figures and Tables before uploading the relevant files. These numbers allow editorial staff and reviewers to confirm that all figures and tables were actually included with the manuscript and, because Tables and Figures occupy space, to assess if the information provided by the figures and tables warrants the paper's length and if the manuscript fits within the journal's space limits.

Conflict of Interest declaration. Conflict of interest information for each author needs to be part of the manuscript; each journal should develop standards with regard to the form the information should take and where it will be posted. The ICMJE has developed a uniform conflict of interest disclosure form for use by ICMJE member journals and the ICMJE encourages other journals to adopt it. Despite availability of the form, editors may require conflict of interest declarations on the manuscript title page to save the work of collecting forms from each author prior to making an editorial decision or to save reviewers and readers the work of reading each author's form.

b. Abstract

Original research, systematic reviews, and meta-analyses require structured abstracts. The abstract should provide the context or background for the study and should state the study's purpose, basic procedures (selection of study participants, settings, measurements, analytical methods), main findings (giving specific effect sizes and their statistical and clinical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations, note important limitations, and not overinterpret findings. Clinical trial abstracts should include items that the CONSORT group has identified as essential. Funding sources should be listed separately after the Abstract to facilitate proper display and indexing for search retrieval by MEDLINE.

Because abstracts are the only substantive portion of the article indexed in many electronic databases, and the only portion many readers read, authors need to ensure that they accurately reflect the content of the article. Unfortunately, information in abstracts often differs from that in the text. Authors and editors should work in the process of revision and review to ensure that information is consistent in both places. The format required for structured abstracts differs from journal to journal, and some journals use more than one format; authors need to prepare their abstracts in the format specified by the journal they have chosen.

The ICMJE recommends that journals publish the clinical trial registration number at the end of the abstract. The ICMJE also recommends that, when a

registration number is available, authors list that number the first time they use a trial acronym to refer to the trial they are reporting or to other trials that they mention in the manuscript. If the data have been deposited in a public repository, authors should state at the end of the abstract the data set name, repository name and number.

c. Introduction

Provide a context or background for the study (that is, the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation. Cite only directly pertinent references, and do not include data or conclusions from the work being reported.

d. Methods

The guiding principle of the Methods section should be clarity about how and why a study was done in a particular way. Methods section should aim to be sufficiently detailed such that others with access to the data would be able to reproduce the results. In general, the section should include only information that was available at the time the plan or protocol for the study was being written; all information obtained during the study belongs in the Results section. If an organization was paid or otherwise contracted to help conduct the research (examples include data collection and management), then this should be detailed in the methods.

The Methods section should include a statement indicating that the research was approved or exempted from the need for review by the responsible review committee (institutional or national). If no formal ethics committee is available, a statement indicating that the research was conducted according to the principles of the Declaration of Helsinki should be included.

i. Selection and Description of Participants

Clearly describe the selection of observational or experimental participants (healthy individuals or patients, including controls), including eligibility and exclusion criteria and a description of the source population. Because the relevance of such variables as age, sex, or ethnicity is not always known at the time of study design, researchers should aim for inclusion of representative populations into all study types and at a minimum provide descriptive data for these and other relevant demographic variables. If the study was done involving an exclusive population, for example in only one sex, authors should justify why, except in obvious cases (e.g., prostate cancer)." Authors should define how they measured race or ethnicity and justify their relevance.

ii. Technical Information

Specify the study's main and secondary objectives–usually identified as primary and secondary outcomes. Identify methods, equipment (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow others to reproduce the results. Give references to established methods, including statistical methods (see below); provide references and brief descriptions for methods that have been published but are not well-known; describe new or substantially modified methods, give the reasons for using them, and evaluate their limitations. Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration. Identify appropriate scientific names and gene names.

iii. Statistics

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to judge its appropriateness for the study and to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Avoid relying solely on statistical hypothesis testing, such as P values, which fail to convey important information about effect size and precision of estimates. References for the design of the study and statistical methods should be to standard works when possible (with pages stated). Define statistical terms, abbreviations, and most symbols. Specify the statistical software package(s) and versions used. Distinguish prespecified from exploratory analyses, including subgroup analyses.

e. Results

Present your results in logical sequence in the text, tables, and figures, giving the main or most important findings first. Do not repeat all the data in the tables or figures in the text; emphasize or summarize only the most important observations. Provide data on all primary and secondary outcomes identified in the Methods Section. Extra or supplementary materials and technical details can be placed in an appendix where they will be accessible but will not interrupt the flow of the text, or they can be published solely in the electronic version of the journal.

Give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical significance attached to them, if any. Restrict tables and figures to those needed to explain the argument of the paper and to assess supporting data. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables. Avoid nontechnical uses of technical terms in statistics, such as "random" (which implies a randomizing device), "normal," "significant," "correlations," and "sample."

Separate reporting of data by demographic variables, such as age and sex, facilitate pooling of data for subgroups across studies and should be routine, unless there are compelling reasons not to stratify reporting, which should be explained.

f. Discussion

It is useful to begin the discussion by briefly summarizing the main findings, and explore possible mechanisms or explanations for these findings. Emphasize the new and important aspects of your study and put your finings in the context of the totality of the relevant evidence. State the limitations of your study, and explore the implications of your findings for future research and for clinical practice or policy. Do not repeat in detail data or other information given in other parts of the manuscript, such as in the Introduction or the Results section.

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, distinguish between clinical and statistical significance, and avoid making statements on economic benefits and costs unless the manuscript includes the appropriate economic data and analyses. Avoid claiming priority or alluding to work that has not been completed. State new hypotheses when warranted, but label them clearly.

g. References

i. General Considerations Related to References

Authors should provide direct references to original research sources whenever possible. References should not be used by authors, editors, or peer reviewers to promote self-interests.Although references to review articles can be an efficient way to guide readers to a body of literature, review articles do not always reflect original work accurately. On the other hand, extensive lists of references to original work on a topic can use excessive space. Fewer references to key original papers often serve as well as more exhaustive lists, particularly since references can now be added to the electronic version of published papers, and since electronic literature searching allows readers to retrieve published literature efficiently.

Do not use conference abstracts as references: they can be cited in the text, in parentheses, but not as page footnotes. References to papers accepted but not yet published should be designated as "in press" or "forthcoming." Information from manuscripts submitted but not accepted should be cited in the text as "unpublished observations" with written permission from the source.

Avoid citing a "personal communication" unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. For scientific articles, obtain written permission and confirmation of accuracy from the source of a personal communication.

Some but not all journals check the accuracy of all reference citations; thus, citation errors sometimes appear in the published version of articles. To minimize such errors, references should be verified using either an electronic bibliographic source, such as PubMed, or print copies from original sources. Authors are responsible for checking that none of the references cite retracted articles except in the context of referring to the retraction. For articles published in journals indexed in MEDLINE, the ICMJE considers PubMed the authoritative source for information about retractions. Authors can identify retracted articles in MEDLINE by searching PubMed for "Retracted publication [pt]", where the term "pt" in square brackets stands for publication type, or by going directly to the PubMed's list of retracted publications.

References should be numbered consecutively in the order in which they are first mentioned in the text. Identify references in text, tables, and legends by Arabic numerals in parentheses.

References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure. The titles of journals should be abbreviated according to the style used for MEDLINE (www.ncbi.nlm.nih.gov/nlmcatalog/journals). Journals vary on whether they ask authors to cite electronic references within parentheses in the text or in numbered references following the text. Authors should consult with the journal to which they plan to submit their work.

ii. Reference Style and Format

References should follow the standards summarized in the NLM's International Committee of Medical Journal Editors (ICMJE) Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals: Sample References webpage and detailed in the

NLM's Citing Medicine, 2nd edition. These resources are regularly updated as new media develop, and currently include guidance for print documents; unpublished material; audio and visual media; material on CD-ROM, DVD, or disk; and material on the Internet.

h. Tables

Tables capture information concisely and display it efficiently; they also provide information at any desired level of detail and precision. Including data in tables rather than text frequently makes it possible to reduce the length of the text.

Prepare tables according to the specific journal's requirements; to avoid errors it is best if tables can be directly imported into the journal's publication software. Number tables consecutively in the order of their first citation in the text and supply a title for each. Titles in tables should be short but self-explanatory, containing information that allows readers to understand the table's content without having to go back to the text. Be sure that each table is cited in the text.

Give each column a short or an abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Explain all nonstandard abbreviations in footnotes, and use symbols to explain information if needed. Symbols may vary from journal to journal (alphabet letter or such symbols as *, †, ‡, §), so check each journal's instructions for authors for required practice. Identify statistical measures of variations, such as standard deviation and standard error of the mean.

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Additional tables containing backup data too extensive to publish in print may be appropriate for publication in the electronic version of the journal, deposited with an archival service, or made available to readers directly by the authors. An appropriate statement should be added to the text to inform readers that this additional information is available and where it is located. Submit such tables for consideration with the paper so that they will be available to the peer reviewers.

i. Illustrations (Figures)

Digital images of manuscript illustrations should be submitted in a suitable format for print publication. Most submission systems have detailed instructions on the quality of images and check them after manuscript upload. For print submissions, figures should be either professionally drawn and photographed, or submitted as photographic-quality digital prints.

For X-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens or photomicrographs, send high-resolution photographic image files. Since blots are used as primary evidence in many scientific articles, editors may require deposition of the original photographs of blots on the journal's website.

Although some journals redraw figures, many do not. Letters, numbers, and symbols on figures should therefore be clear and consistent throughout, and large enough to remain legible when the figure is reduced for publication. Figures should be made as self-explanatory as possible, since many will be used directly in slide presentations. Titles and detailed explanations belong in the legends—not on the illustrations themselves.

Photomicrographs should have internal scale markers. Symbols, arrows, or letters used in photomicrographs should contrast with the background. Explain the internal scale and identify the method of staining in photomicrographs.

Figures should be numbered consecutively according to the order in which they have been cited in the text. If a figure has been published previously, acknowledge the original source and submit written permission from the copyright holder to reproduce it. Permission is required irrespective of authorship or publisher except for documents in the public domain.

In the manuscript, legends for illustrations should be on a separate page, with Arabic numerals corresponding to the illustrations. When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, identify and explain each one clearly in the legend.

j. Units of Measurement

Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.

Temperatures should be in degrees Celsius. Blood pressures should be in millimeters of mercury, unless other units are specifically required by the journal.

Journals vary in the units they use for reporting hematologic, clinical chemistry, and other measurements. Authors must consult the Information for Authors of the particular journal and should report laboratory information in both local and International System of Units (SI).

Editors may request that authors add alternative or non-SI units, since SI units are not universally used. Drug concentrations may be reported in either SI or mass units, but the alternative should be provided in parentheses where appropriate.

k. Abbreviations and Symbols

Use only standard abbreviations; use of nonstandard abbreviations can be confusing to readers. Avoid abbreviations in the title of the manuscript. The spelled-out abbreviation followed by the abbreviation in parenthesis should be used on first mention unless the abbreviation is a standard unit of measurement.

Original Article

Mortality and Morbidities in Ventilator-Associated Pneumonia in Intensive Care Unit versus Non-Intensive Care Unit Patients

ORIGINAL ARTICLE BY

Nittaya Bungmool[1], M.D.; Piyanuch Niltarach[2], M.D.; Ponlawat Prangsri[3], M.D., Pramuk Phonsombunsuk[4], M.D.; Trin Ngamdee[5] , M.D.

[1]Nong Ruea Hospital, Thailand; [2]Akat Amnuai Hospital, Thailand; [3]Chai Wan Hospital, Thailand; [4]Chaiyaphum Hospital, Thailand; [5]Wang Sam Mo Hospital, Thailand

ABSTRACT

BACKGROUND

Ventilator-Associated Pneumonia (VAP) is a condition that causes high morbidity and mortality as well as hospital cost in both intensive care unit (ICU) and non-ICU. However, none of previous studies comparing mortality rates of VAP between those admitted in the ICU and non-ICU.

METHODS

We conducted a retrospective cohort study to assess mortality rates in patients with VAP on ventilators between those admitted to the ICU and non-ICU from 2011 to 2012 excluding patients with pneumonia before hospitalization, transfer from non-ICU to ICU before VAP diagnosis and who did not meet criteria for VAP diagnosis.

RESULTS

Between 2011 and 2012. Among 259 patients with VAP; 54 were in the ICU and 205 were non-ICU, the mortality rates in were similar in both groups (9.3% vs 8.3%; relative risk (RR), 1.03; 95% confidence interval (CI), 0.81 to 1.30). However, there were a higher rate of sepsis (RR, 1.21; 95% CI, 1.04 to 1.40), hospital length of stay ($P<0.001$) and duration on ventilator ($P=0.002$) in the former group. Moreover, after adjusting using the Cox proportional hazard regression for male sex, age, neurological injury, sepsis, trauma, neurological impairment, respiratory failure, treated with penicillin, treated with third generation cephalosporin, infected with *Pseudomonas aeruginosa* and infected with Acinetobacter sp. admission to the ICU and all other variables above were not associated with mortality.

CONCLUSION

Admission to the ICU did not increase the mortality rate in those with VAP.

INTRODUCTION

Ventilator-associated Pneumonia (VAP) occurs in people who are on mechanical ventilator, through endotracheal tube (ET) or tracheostomy tube.[1-2] It is a nosocomial infection and it associates with higher rate of subsequent emergent reintubation, morbidity, mortality and increased use of healthcare resources.[3-13] Early-onset VAP is most often due to antibiotic-sensitive bacteria e.g., methicillin-sensitive *Staphylococcus aureus*, *Haemophilus influenzae*, and *Streptococcus pneumoniae*. Whereas late-onset VAP is frequently caused by antibiotic-resistant pathogens e.g., methicillin-resistant *Staphylococcus aureus, Pseudomonas aeruginosa*, Acinetobacter species, and Enterobacter species.[14-21]

Many studies suggested the high mortality rate in those with VAP ranged from 8.2-56.8%.[6-9] Moreover, many factors found to be associated with higher mortality including older age, high white blood cell count, being transplant recipient, receiving transfusion and having pulmonary disease.[22] However, there is no evidence suggests higher mortality rate from VAP in those admitted to the ICU. Therefore the purpose of this study is to identify the association between ICU admission and mortality.

METHODS

Study design

We conducted a retrospective cohort study to compare the mortality rate from VAP of those admitted to the ICU and non-ICU in Khon Kaen Hospital, a tertiary-care hospital in the northeast of Thailand.

Patients

Initially, adult patients aged between 18 and 60 years admitted to Khon Kaen Hospital from 2011 to 2012 with the diagnosis of pneumonia were included. VAP was defined in any symptoms of pneumonia appeared with two out of three of these criteria (i) one of the following: presence of fever, leukocytosis-white blood cell count (WBC)≥12,000 cell/mm^3 or leukopenia (WBC<4,000 cell/mm^3); (ii) two of the following: a change in sputum characteristics; the presence of a new cough, dyspnea, and/or tachypnea; a change in breath sounds; or increased oxygen and/or ventilation demands; and (iii) the presence of a new and persistent (unless no underlying cardiopulmonary disease) radiographic infiltrate, consolidation, or cavitation.[4] In the analysis, 259 patients were included.

Data collection

Their medical records of both admitted to the ICU and non-ICU were reviewed. Data regarding their age, sex, diagnosis at admission e.g., neurological injury, sepsis, gastrointestinal hemorrhage, metastatic cancer, postoperative condition, trauma and burn, indication for mechanical ventilation e.g., neurological impairment, respiratory failure, comorbidity such as stroke, and/or anoxic brain injury, chronic obstructive pulmonary disease (COPD)/chronic respiratory failure (CRF), spinal cord injury and/or paralysis, diabetes mellitus, malignancy, coronary heart disease (CAD)/congestive heart failure (CHF), substance abuse, HIV infection, autoimmune disease, chronic renal failure and liver cirrhosis, organisms and prescribed antibiotics were verified and collected.

Outcome

The primary outcome of this study was the mortality. The secondary outcomes included sepsis, acute respiratory distress syndrome, empyema and pleural effusion, urinary tract infection, pressure sore, hospital length of stay, duration on ventilator and time of VAP diagnosis.

Statistical analysis

Before proceeding to the analysis, all data were double entered. They were cleaned. After frequency tables were generated for all variable to identify wild card variables they were cleaned and verified again. Categorical variables are presented as numbers and percentages, and continuous variables are presented as median and interquartile range (IQR). The significance of baseline differences was determined by chi-square test, Fisher's exact, or Mann-Whitney U test, as appropriate. A two-sided P less than 0.05 was considered to indicate statistical significant. We used either chi-square test or Fisher's exact test for sex, diagnosis at admission, indication for mechanical ventilation, comorbidity, microorganism, antibiotic, mobility of VAP and used Mann-Whitney U for age, length in hospital, length of on ventilation to compare the the difference between ICU and non-ICU patients. For treatment outcomes, relative risk (RR) was used to expressed together with their 95% confidence interval (CI) where appropriate. We estimated adjusted hazard ratio for mortality using Cox proportional hazard regression (HR).

RESULTS

From 2011 to 2012, a total of 1,607 patients with pneumonia and intubation were reviewed, however, only 259 patients met our inclusion criteria (Figure 1). The included patients were 18-60 years old with trauma as a leading cause for admission. The most common indication for intubation and comorbidity was respiratory failure and substance abuse respectively (Table 1). The two groups did not differ in term of age, diagnosis at admission (neurological injury, sepsis, COPD and/or CRF, gastrointestinal hemorrhage, metastatic cancer, trauma and burn), indication for intubation (neurological impairment, respiratory failure), comorbidity (stroke and/or anoxic brain injury, COPD and/or CRF, spinal cord injury and/or paralysis, diabetes mellitus, malignancy, CAD and/or CHF, substance abuse, HIV infection, chronic renal failure, liver cirrhosis) but there were significant higher proportion of male and less proportion of patients with autoimmune disease in non-ICU group (P=0.002 and 0.021, respectively).

Table 2 presents microorganism and prescribed antibiotics found in the current study. Acinetobacter sp. was most common microorganism found in patients admitted in both the ICU and non-ICU. The two groups did not differ in term of infected gram-positive organism (methicillin-resistant *S. aureus*, methicillin-sensitivity *S. aureus*, *Streptococcus pneumoniae* and other streptococci), gram-negative (*Haemophilus influenzae*, *Pseudomonas aeruginosa*, Klebsiella sp., *Escherichia coli*, Enterobacter sp., Proteus sp., Corynebacterium sp., Stenotrophomonas sp.). Penicillin and third generation cephalosporin were the most common two antibiotics prescribed in these patients. Other prescribed antibiotics included penicillin group, first-generation cephalosporin, second-generation cephalosporin, third-generation cephalosporin, carbapenem, aminoglycosides, trimethoprim/

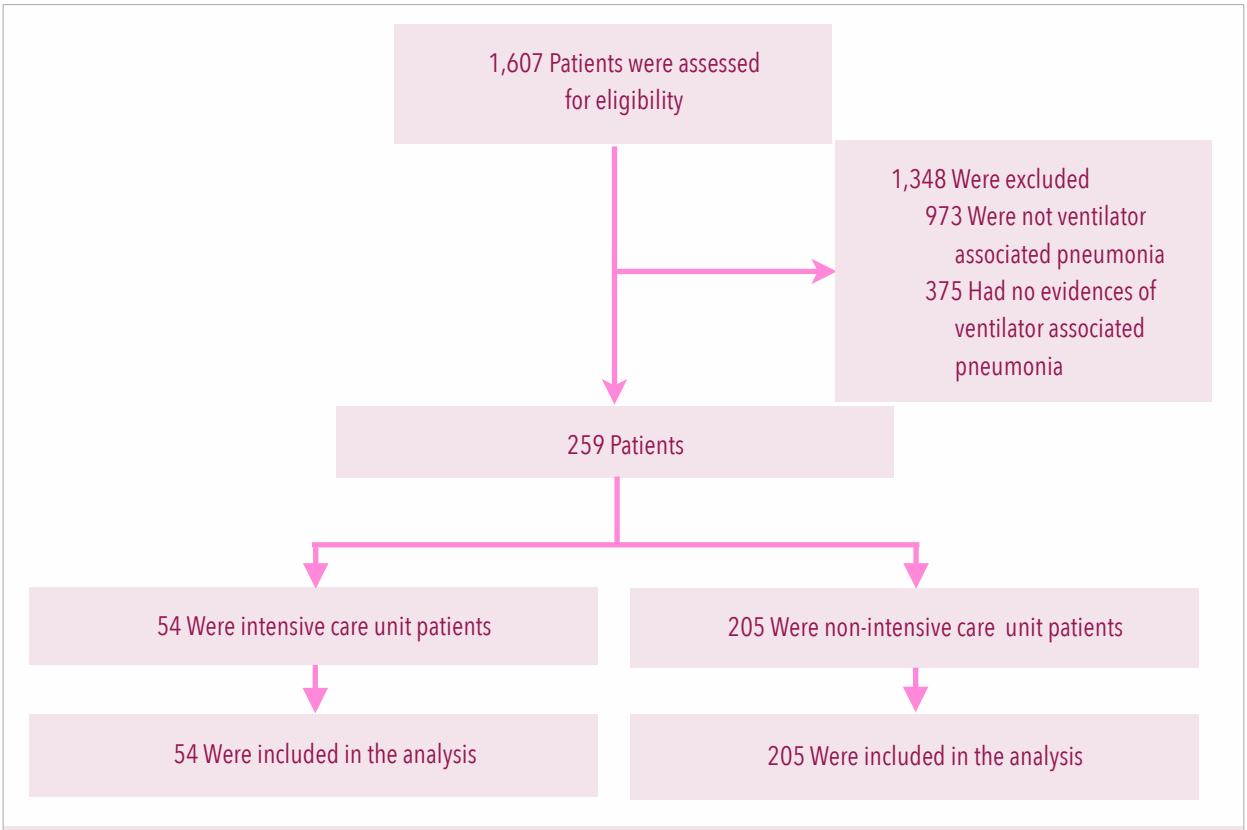

Figure 1. Study flow chart.

sulfamethoxazole, colistin, fosfomycin. There were significant higher proportion of those infected with Acinetobacter sp., and being prescribed with penicillin, fluoroquinolones, vancomycin, and colistin in the ICU group (P=0.027, 0.032, 0.007, 0.022, 0.038, respectively).

Table 3 presents outcomes in term of mortality and morbidities including sepsis, acute respiratory distress syndrome, lung abscess, empyema, pleural effusion, urinary tract infection, pressure sore, hospital mortality, hospital length of stay, duration on ventilator, time of VAP diagnosis. There were significant higher rate of sepsis and pleural effusion, longer hospital length of stay and duration on ventilator in the ICU group (P=0.006, 0.021, <0.001, 0.002, respectively). From the Kaplan Meier presented in Figure 2, admission to the ICU was not associated with mortality. Table 4 presents factors predicting mortality and their adjusted hazard ratios from Cox proportional hazard regression. Eleven factors were included in the the regression e.g.,male sex, age, neurological injuries, sepsis, trauma, neurological impairment, respiratory failure, treated with penicillin, treated with third generation cephalosporin, infected with *Pseudomonas aeruginosa* and infected with Acinetobacter sp. However, it seemed that no factors had influence over mortality in the present study.

Table 1. Baseline Characteristics of the included Patients.

Characteristic	Intensive care unit group	Non-intensive care unit group	P Value
Age---yr			0.865
Median	41.5	43	
Interquartile range	28.8-52.3	30.0-51.0	
Male-no. (%)	34 (63.0)	169 (82.4)	0.002
Diagnosis at admission-no. (%)			
Neurological injury	14 (25.9)	68 (33.2)	0.309
Sepsis	10 (18.5)	21 (10.2)	0.096
Gastrointestinal hemorrhage	3 (5.6)	9 (4.4)	0.718
Metastatic cancer	2 (3.7)	5 (2.4)	0.638
Postoperative condition	6 (11.1)	10 (4.9)	0.111
Trauma	30 (55.6)	131 (63.9)	0.261
Burn	1 (1.9)	5 (2.4)	1.000
Indication for receipt of mechanical ventilation-no. (%)			
Neurological impairment	21 (38.9)	89 (43.4)	0.549
Respiratory failure	34 (63.0)	112 (54.6)	0.272
Others	0	6 (2.9)	0.349
Comorbidity-no. (%)			
Stroke and/or anoxic brain injury	5 (9.3)	14 (6.8)	0.559
COPD/chronic respiratory failure	1 (1.9)	2 (1.0)	0.506
Spinal cord injury and/or paralysis	1 (1.9)	10 (4.9)	0.468
Diabetes mellitus	4 (7.4)	15 (7.3)	1.000
Malignancy	1 (1.9)	3 (1.5)	1.000
Coronary heart disease/congestive heart failure	1 (1.9)	40 (4.9)	0.468
Substance abuse	4 (17.4)	34 (16.6)	0.090
HIV infection	0	5 (2.4)	0.587
Autoimmune disease	5 (9.3)	4 (2.0)	0.021
Chronic renal failure	2 (3.7)	5 (2.4)	0.638
Liver cirrhosis	6 (11.1)	8 (3.9)	0.082

Table 2. Microorganisms Isolated from Patients with Ventilator Associated Pneumonia and Antibiotics

Microorganism	Intensive care unit group	Non-intensive care unit group	P Value
Gram-positive-no. (%)			
Methicillin-resistant *S. aureus*	4 (8.2)	12 (16.6)	0.752
Methicillin-sensitivity *S. aureus*	2 (4.1)	20 (11.0)	0.178
Streptococcus pneumoniae	1 (2.0)	2 (1.1)	0.514
Other streptococci	0	3 (1.7)	1.000
Gram-negative-no. (%)			
Haemophilus influenzae	2 (4.1)	1 (0.6)	0.116
Pseudomonas aeruginosa	21 (42.9)	73 (40.3)	0.750
Klebsiella sp.	11 (22.4)	53 (29.3)	0.344
Escherichia coli	2 (4.1)	9 (5.0)	1.000
Enterobacter sp.	2 (4.1)	16 (8.8)	0.376
Proteus sp.	2 (4.1)	5 (2.8)	0.643
Acinetobacter sp.	29 (59.2)	75 (41.4)	0.027
Corynebacterium sp.	1 (2.0)	6 (3.3)	1.000
Stenotrophomonas sp.	3 (6.1)	5 (2.8)	0.372
Antibiotics			
Penicillin group-no. (%)	29 (53.7)	77 (37.6)	0.032
First-generation cephalosporin-no. (%)	0	3 (1.5)	1.000
Second-generation cephalosporin-no. (%)	2 (3.7)	10 (4.9)	1.000
Third-generation cephalosporin-no. (%)	31 (57.4)	142 (69.3)	0.100
Carbapenem group-no. (%)	17 (31.5)	59 (28.8)	0.698

DISCUSSION

Main findings

We found mortality rate of VAP in ICU patients and non-ICU patients did not differ significantly. For morbidity, those admitted to the ICU tended to be more severe regarding sepsis, pleural effusion, hospital length of stay and duration on ventilator. From the log rank test, admission to the ICU was found to be not associated with mortality. Furthermore, this was confirmed by the Cox proportional hazard regression where admission to the ICU and other factors were found to be not associated with mortality.

Table 2. Microorganisms Isolated from Patients with Ventilator Associated Pneumonia and Antibiotics

Characteristic	Intensive care unit group	Non-intensive care unit group	P Value
Aminoglycosides-no. (%)	5 (9.3)	11 (5.4)	0.338
Fluoroquinolones-no. (%)	11 (20.4)	16 (7.8)	0.007
Trimethoprim/sulfamethoxazole-no. (%)	2 (3.7)	4 (2.0)	0.608
Vancomycin-no. (%)	14 (25.9)	27 (13.2)	0.022
Colistin-no. (%)	14 (25.9)	29 (14.1)	0.038
Fosfomycin-no. (%)	5 (9.3)	12 (5.9)	0.362

Table 3. Treatment Outcomes

Outcome	Intensive care unit group	Non-intensive care unit group	Relative risk/P Value
Mortality-no. (%)	5 (9.3)	17 (8.3)	1.03 (0.81-1.30)
Morbidity-no. (%)			
Sepsis	29 (53.7)	68 (33.2)	1.21 (1.04-1.40)
Acute respiratory distress syndrome	14 (25.9)	32 (15.1)	1.18 (0.96-1.45)
Pleural effusion	13 (24.1)	24 (11.7)	1.26 (0.98-1.61)
Urinary tract infection	14 (25.9)	53 (25.9)	1.00 (0.87-1.15)
Pressure sore	9 (16.7)	18 (8.8)	1.21 (0.92-1.59)
Hospital length of stay-days			<0.001
Median	29	19	
Interquartile range	16.8-46.5	12.0-28.3	
Duration on ventilator-days			0.002
Median	19	15	
Interquartile range	12.8-41.0	9.0-23.0	
Time of VAP diagnosis-days			0.309
Median	5	5	
Interquartile range	3.0-8.5	3.0-7.0	

Table 4. Factors Predicting Mortality and Adjusted Hazard Ratios from Cox Proportional Hazard Regression

Factor	Adjusted hazard ratio	95% Confidence Interval	P Value
Male sex	0.80	0.26-2.50	0.705
Age	1.03	0.98-1.09	0.287
Neurological injuries	0.39	0.08-1.93	0.246
Sepsis	1.34	0.28-6.51	0.719
Trauma	0.29	0.07-1.22	0.091
Neurological impairment	1.19	0.17-8.36	0.862
Respiratory failure	2.07	0.36-11.75	0.414
Treated with penicillin	0.40	0.10-1.57	0.188
Treated with third generation cephalosporin	2.00	0.52-7.50	0.321
Infected with Pseudomonas aeruginosa	0.23	0.05-1.09	0.064
Infected with Acinetobacter sp.	1.33	0.41-4.30	0.633

Comparison with other studies

The mortality rate as the primary outcome in the present study was found to be 8.3% in those admission to the ICU. This was similar to the previous multi-center study which stated the mortality around 8.2% in those admitted to the ICU between 2003 and 2004.[7] For sepsis, the rate was about 53.7% in those admitted to the ICU. This was relative high comparing with the previous US study in 2006 in 398 ICU patients. The differences might be due to the prevalent pathogens of the two settings, Acinetobacter sp. was the most common organism in our study while MRSA was the most common in that study.[23] Our study showed that no factors had influence over mortality. The median length of hospital stay in our study was 29 days which was longer than that of previous study.[24] Moreover, patients in the current study required to be on ventilator approximately 19 days which was also longer than that of a multi-center study in the US.[25] We have observed both similarities and differences across the studies, and the mentioned differences might be the attribution from patients' factors, types of infected organisms and types of antibiotics.[24,25]

Strength and limitation

This was the first study to our knowledge that informed whether admission to the ICU was not associated with mortality in those with VAP. Even though our study was a retrospective in nature,

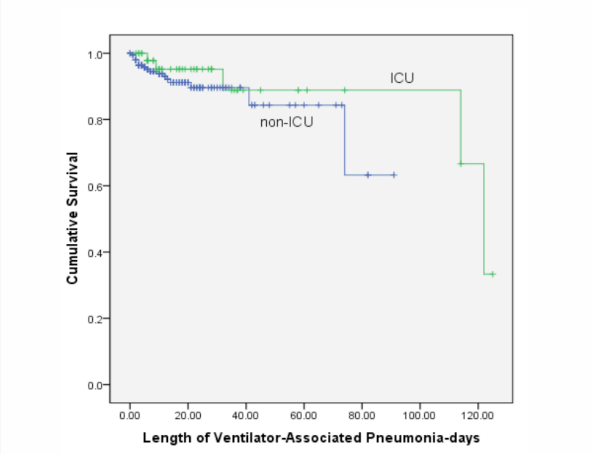

Figure 2. Kaplan-Meier Estimates Survival in ICU and Non-ICU Patients with Ventilator-Associated Pneumonia.

missing data were found to be minimal. Our study included the patients up to 2-year period. However, due to small sample size, this might affect the precision of the model to identify factor predicting death. Larger cohort study to ascertain our results should be performed. During this 2-year period, we also observed the change in pattern of antibiotics used; colistin was more commonly used in the recent year, this also might affect on the treatment outcome.

Conclusion and implication

In conclusion, admission to the ICU was not associated with mortality in patients with VAP. However, those admitted to the ICU tended to be more severe in term of higher rate of sepsis, longer hospital stay and longer duration on ventilator, thus, we still need to be more careful for those patients. As mentioned earlier, the larger prospective cohort is required for more accurate model identify factor predicting death in VAP patients.

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Causes of Class Cancellation in Surgical Teaching: a cross-sectional study

ORIGINAL ARTICLE BY

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ABSTRACT

OBJECTIVE

To identify causes of class cancellation of surgical teaching.

METHODS

This was a cross-sectional study using iterative three-stage process of questionnaire development with Delphi Method implemented to a panel of teaching surgeons with at least one surgery teaching session with fourth, fifth or sixth year medical students to identify the causes of class cancellation at Khon Kaen Hospital, Thailand between January to August of 2015. Both extra- and unscheduled classes were excluded.

RESULTS

There were 36 teaching surgeons participated in the present study. There were 60 class cancellation; 2 classes per week. The causes included lecturer having emergency operations, having concurrent seminars, forgetting the class, students having extra-curricular activities or simultaneous classes. Consensus of the answers in the first two round, thus, the third round with Likert scale scoring was then omitted.

CONCLUSION

The most common cause of class cancellation in surgical teaching were lecturers having emergency operation.

INTRODUCTION

Classes cancellation is still common in medical teaching with various causes e.g., severe weather conditions and traffic problems.[1] It leads to the alteration of course syllabus sequence and potentially leads to the reduction of content assimilation.[2] This can, in turn, cause low student success rate and graduation of less competent young doctors and surgeons which might be subsequently associated with a shortage of doctors and surgeons in a larger perspective.[2] Few studies mentioned about procrastination and delay course teaching[3,4], however, evidences establishing causes of class cancellation are still scarce. Thus, the objective of this study was to investigate causes of class cancellation.

METHODS

Study design and oversight

This was a cross-sectional study to identify the possible causes of class cancellation of surgical teaching at Department of Surgery, Khon Kaen Hospital between January and August 2015. Classes in the department were always scheduled in advance with consensus from all lecturers.

Participants

Surgical staff at the hospital were invited to participate in this study. They must be a staff with at least one surgery teaching session with fourth, fifth or sixth year medical students at the institute.

Study procedure

The research applied a three steps with Delphi method approach[5] to the staff. Following the Delphi standard operational procedure, an iterative three-stage process of questionnaire development was implemented. For the first stage, opened question "what is the most common cause of your class cancellation?" was distributed to a panel of surgeon-lecturers via mobile phone applications; Facebook and Line. The question was not applied to extra- and unscheduled classes or postponed classes by the students. The answers derived from the first round were grouped into 10 causes of class cancellation. For this stage, the staff were asked to rank the those 10 causes of their own class cancellation anonymously using the Google Form Application from the highest frequency as 1 till the lowest frequency as 10. From the first and the second round, any discordance, the staff will be asked to score those causes using 3-point Likert scale in the third round.

Statistical analysis

Causes of class cancellation were analyzed and interpreted using descriptive statistics in term of frequency and relative rank.

RESULTS

Participants

There were 36 surgical staff at the institute with 60 class cancellation during the study period with averagely 2 classes per week. All of them gave lectures to fourth, fifth and sixth year medical students with experiences of class cancellation or postponement. Most of them were male with age ranged between 30 to 40 years old. Most of them were general surgeons following by plastic suregons, pediatric surgeons, urological surgeon

Table 1. Cause of class cancellation.

Causes	First round	Second round
	no. (relative rank)	
Having emergency operations	5 (1)	15 (1)
Having a concurrent conference	2 (2)	11 (2)
Forgot the class	1 (3)	3 (3)
Postponed by students	1 (3)	2 (4)
Simultaneous class	1 (3)	1 (5)

and vascular surgeon. During the first round of questions, causes of class cancellation were identified. These included lecturer having emergency operations, having concurrent seminars, forgetting the class, students having extra-curricular activities or simultaneous classes (Table 1). The same pattern was observed in the second round. Since there were no discordance of ranking between the first and the second round, the third round with Likert scale scoring was then omitted.

DISCUSSION

Principal findings

Our findings suggested that the most common cause of class cancellation was related to emergency operations arising suddenly and unpredictably in surgeons' agendas. The impromptu nature of these emergencies, their high priority over lecture contributed to high frequency of class cancellation in Department of Surgery, Khon Kaen Hospital during our study period. Most of the mentioned causes were relatively iterative and were aware by most of the lecturer in our institute.

Comparison with other studies

In a previous study, elective operations schedule were subjected to frequent changes in relation to theater availability, patients not presenting themselves, changes in surgical plan and equipment failure.[5] This further increased the likelihood for surgeon lecturers to cancel classes without advance notice.[5] In case of scheduled operations, there was no evidence that elective operations have been postponed due to concurrent classes, further suggesting the immediate priority status of even minor surgical operations over lecture.[5] Similar to our study, elective surgery were not influence class cancellation in our institute due to the advance fixed schedule of operation period and were not allowed to have simultaneous teaching class. Furthermore, our institute was located in the tropical region with relatively stable weather, class cancellation due to weather incident was relative rare.

Strengths and limitations

To our knowledge, this is the first study mentioning the cause of class cancellation in surgery teaching. However, in our specific context, generalization of

our findings is still limited. As our institute is a tertiary care facility in Thailand, high rate of emergency surgery is inevitable. In addition to this, our identified causes were not varied. Most answers from the first round could be grouped to 10 causes of the cancellation. This might not be applied to other settings with other reasons.

Conclusion and implication

The Delphi method implemented in our study has led to rapid, straightforward and consensual decisions regarding the problem under investigation. It was consensually agreed by all surgeon lecturers involved in the study that emergency operations and the resulting shifts in lecturers schedules was the main cause of class cancellation in Department of Surgery, Khon Kaen Hospital. Although reducing the occurrence of emergency operations involves broader and longer-term public health policy adjustments e.g., setting up internal guidelines and measures that allows adaptive management of class cancellation is warranted. We suggested one of the effective measures to mitigate the high frequency of class cancellation would be internal structural readjustments involving the organization of "teaching pairs" and the facilitation of real-time communication through e-learning interfaces. This would ultimately increase class rescheduling efficiency and time allocation optimization in case of emergency operation. Complementarily, web-based real-time information delivery systems available in some institutions have considerably facilitated early announcement of class cancellation and subsequent schedule adjustments, whereby students and lecturers are more likely to adapt efficiently their schedules. Moreover, official internal administrative frameworks, guidelines and protocols regarding class cancellation contributing to incentives might be another measure.

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Effects of music therapy on symptom cluster and postoperative functional performance in patient undergoing abdominal surgical

ORIGINAL ARTICLE BY

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ABSTRACT

OBJECTIVE

To investigate effects of music therapy on symptoms and postoperative functional performance in patients undergoing abdominal surgery

METHODS

This was a quasi-experimental study. Patients undergoing both elective and emergency abdominal surgery between December 2015 and April 2016 at the Postoperative Unit of Nakhon Phanom Hospital were recruited into the study. The experimental group received routine nursing care and was offered music through a headphone for 30 minutes twice a day in the morning and evening on the first and second days after the surgery, while the control group received only routine nursing care. Symptoms assessment scale (SAS) and the postoperative functional performance questionnaire (PFPQ) were used to assess the outcomes.

RESULTS

The study findings showed that on the first and second days after the surgery, the experimental group had better pain improvement at the end of Day 1 and Day 2 than that of control group ($P<0.001$ and $P<0.012$, respectively). The former group had better improvement in relation to insomnia at the end of Day 1 and Day 2 than that of later group ($P<0.001$ and $P<0.001$, respectively). Moreover, the former group had better improvement in relation to fatigue at the end of Day 1 than that of later group ($P<0.004$) and the former group had better improvement in relation to anxiety at the end of Day 1 and Day 2 than that of later group ($P<0.007$ and $P<0.002$, respectively). In addition, the participants for functional performance which was assessed using PFPQ, the experimental group had better pain improvement at the end of Day 1 and Day 2 than that of control group ($P=0.001$ and $P<0.001$, respectively).

CONCLUSION

Music therapy in combination with medical treatment reduced postoperative symptoms both physical symptoms and psychological symptom and yielded beneficial effects on some aspects of postoperative functional performance in patients undergoing abdominal surgery.

INTRODUCTION

Abdominal surgery is relative common in comparison to other types of surgery[1], in the US, its rate ranged from 240 to 246.1 per thousand from 2008 to 2010.[2] Its post-operative effects may arise from the use of general anesthesia, patients' illnesses, surgical procedures, and duration of surgery,[3,4] including pain, nausea and vomiting, insomnia, abdominal distention, fatigue, and anxiety.[3-6] Therefore, in the postoperative period, patient' functional performance is affected and can further causes other postoperative complications[4,7] and delay their postoperative recovery.[7,8]

Pain management can be divided into two main types: pharmacological intervention and non- pharmacological intervention.[9] The management of pain with non-pharmacological intervention includes massage, provision of information, relaxation techniques, music therapy, and touch therapy.[9,10] Specific music therapy interventions have been developed for pain management.[9] It makes patients feel more comfortable and relaxed, reduces their pains, and alleviates their anxiety and stress.[9-11] Furthermore, music therapy is particularly effective in promoting emotional development and reducing psychological symptoms[12,13] as it stimulates the secretion of endorphin in the body or fragmented perception of pain.[10] A previous randomized controlled trial (RCT) with 167 patients found that the patients with music therapy had lower pain scores than those of without music therapy.[8] A later RCT with 73 patients undergoing neural surgery also stated that music therapy reduced pain after surgery and alleviated anxiety after surgery.[14]

Music has gained so much popularity as a part of complementary medical therapies and its acceptance has been increasing growing as it is employed with patients undergoing medical and surgical procedures.[15-16] However, the evidence to support of the effect of music therapy on various dimension of physical symptoms and functional performance is still scarce. The primary objective of this study was to evaluate the effects of music therapy on management of physical and physiological symptoms of patients undergoing abdominal surgery.

METHODS

Study design and oversight

This is a quasi-experimental study to preliminarily examine the effects of music therapy on management of physical and physiological symptoms of patients undergoing abdominal surgery. This study was conducted at the inpatient unit, Department of Surgery, Nakhon Phanom Hospital, Thailand from December 2015 to April 2016.

The researcher strictly adhered to the principle of human rights protection since the commencement of data collection until the presentation of the research findings. The researcher met the prospective participants to introduce herself, explain the research objectives and data collection procedures, describe expected outcomes and benefits, and ask for cooperation in data

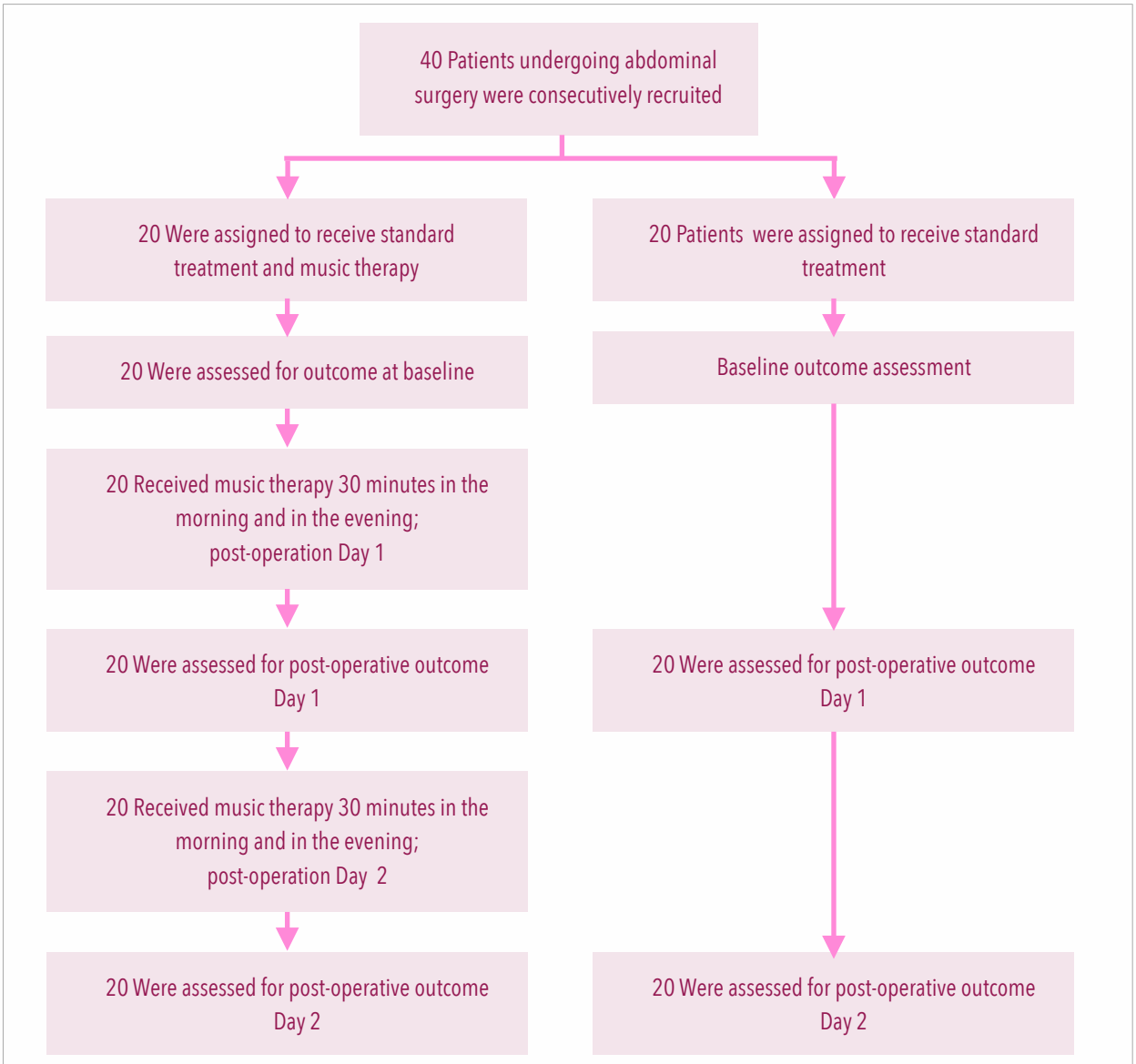

Figure 1. Study flow chart.

collection. They were informed that their participation would be based solely on a voluntary basis and they were able to withdraw from the study at any time they wished without having to give reasons to the researcher. They were also assured that their decision to participate or refuse to participate in this study would not affect the treatment and care they would receive in any way and that the data collected from them would be kept strictly confidential and would be coded and reported only as group data in accordance with the objectives of the present study. The prospective

participants who agreed to participant in the current study were then asked to sign the informed consent form.

Participants

Forty patients were selected by means of purposive sampling, no random assignment with the following criteria; they had to be 18 years of age or older, they had undergone open elective or emergency major abdominal surgery under general anesthesia. We excluded those with simultaneously operation on other parts of the body; accompanying trauma or cancer; and they developed postoperative complications e.g., shock, hemorrhage, re-operative procedures. The sample size was determined with the G Power 3.1.9.2. The alpha value was set at 0.05, with a power of test at 0.80 with a large effect size of 0.8. The calculated sample size was 40 patients; 20 in experimental and control groups.

Interventions

After approval was granted by the Institutional Review Board of Hospital (IEC-NKP1-No. 21/2558), the name list of patients who had undergone abdominal surgery in the previous 24 hours was surveyed at the surgical ward. Male and female patients who met the inclusion criteria were approached by the researchers who informed them of the objectives of the study, data collection procedures, and human rights protection. The prospective participants were invited to participate in the study. After informed consent was obtained from the participants, interviews were conducted to elicit data regarding the participants' demographic characteristics and their music preferences. The participants had adequate verbal or written expression as well as visual and hearing abilities in order to carry out the tests. They were divided into two groups, with the first 20 participants in the experimental group and the latter 20 in the control group.

From Figure 1, the participants in the experimental group were visited on the first day after the surgery to assess their symptoms (pain, nausea/vomiting, insomnia, abdominal distention and anxiety) and functional performance. The patients received music therapy with their own choice of music. The instrumental music was the sound of nature such as sea breeze, bird sounds, rain sounds, and water sounds with regular rhythm about 60-80 beats per minute and with no lyrics, aiming to ensure relaxation.[22] On the first day, the patients listened to the music with an MP3 player and a headphone for 30 minutes, twice a day once in the morning and once in the evening. To assess symptoms and functional performance of the patients for the second time, on the second day after the surgery, the patients listened to music for 30 minutes twice a day. When the music ended, the patients had to complete the assessment of symptoms and functional performance. In preparation for intervention, the environment was prepared to promote relaxation by closing the curtains, dimming the lights, and positioning the patients in a comfortable position with their eyes closed. A headphone was provided to decrease environmental noises and to help them to concentrate on the flow of music. The control group received only routine nursing care. They were not offered music therapy and the patient assessment period was the same as that of the experimental group.

Table 1. Characteristics of the participants

Characteristic	Experimental group (n=20)	Control group (n=20)	P Value
Age-years			0.279
Median	46.5	50.5	
Interquartile range	40.0-58.5	45.3-58.5	
Male gender-no. (%)	10 (50)	11 (55)	0.752
Education-no. (%)			0.826
No education	0	1 (5)	
Primary	17 (85)	15 (75)	
Secondary	3 (15)	3 (15)	
Bachelor or higher	0	1 (5)	
Marital status-no. (%)			0.214
Single	1 (5)	3 (15)	
Married	19 (95)	15 (75)	
Widowed	0	2 (10)	
Diagnosis-no. (%)			0.237
Gallstone or bile duct stone	10 (50)	13 (65)	
Gut obstruction	7 (35)	2 (10)	
Peritonitis	0	1 (5)	
Peptic ulcer perforation	3 (15)	4 (20)	
Type of surgery-no (%)			0.237
Open cholecystectomy	10 (50)	13 (65)	
Explore laparotomy with intestinal surgery	7 (35)	2 (10)	
Explore laparotomy with simple suture	3 (15)	4 (20)	
Explore laparotomy with abdominal toilet	0	1 (5)	
Duration of surgery-minutes			0.454
Median	50	50	
Interquartile range	40-60	35-60	
Incisional length-centimeters	12.5±5.1	12.5±4.2	>0.99

Plus-minus values are mean±SD

Table 2. Treatment outcomes

Outcome	Experimental group (n=20)	Control group (n=20)	P Value
	Median (IQR)		
System assessment scale			
Pain			
Baseline	9 (6 to 12)	9 (6 to 12)	
Day 1	6 (3 to 6)	9 (6 to 11.3)	
Scale difference at Day 1 from the baseline	-4.5 (-6 to -3)	0 (-3 to 0)	<0.001
Day 2	3 (3 to 3)	6 (3.8 to 6)	
Scale difference at Day 2 from the baseline	-6 (-9 to -3)	-3 (-6 to -3)	0.012
Insomnia			
Baseline	6 (3 to 6)	6 (0 to 9)	
Day 1	3 (0 to 3)	6 (3 to 9)	
Scale difference at Day 1 from the baseline	-3 (3- to -3)	0 (-2.3 to 2.3)	<0.001
Day 2	0 (0 to 0)	6 (3 to 6)	
Scale difference at Day 2 from the baseline	-6 (-6 to -3)	0 (-3 to 0)	<0.001
Abdominal distention			
Baseline	3 (0 to 6)	3 (0.8 to 9)	
Day 1	1.5 (0 to 3)	3 (0.8 to 6)	
Scale difference at Day 1 from the baseline	-1.5 (-3 to 0)	0 (0 to 0)	0.142
Day 2	1.5 (0 to 3)	3 (0 to 6)	
Scale difference at Day 2 from the baseline	0 (-3 to 0)	0 (-3 to 3)	0.445
Fatigue			
Baseline	7.5 (6 to 9)	9 (3.8 to 9)	
Day 1	3 (3 to 6)	6 (3 to 9)	
Scale difference at Day 1 from the baseline	-3 (-3 to -3)	0 (-3 to 0)	0.004
Day 2	3 (0.8 to 3)	3 (3 to 6)	
Scale difference at Day 2 from the baseline	-6 (-6 to -3)	-3 (-6 to 0)	0.091

Table 2. Treatment outcome (continued)

Outcome	Experimental group (n=20)	Control group (n=20)	P Value
	Median (IQR)		
Anxiety			
Baseline	6 (0 to 6)	0 (0 to 2.3)	
Day 1	0 (0 to 3)	0 (0 to 3)	
Scale difference at Day 1 from the baseline	-3 (3- to 0)	0 (0 to 0)	0.007
Day 2	0 (0 to 0)	0 (0 to 3)	
Scale difference at Day 2 from the baseline	-6 (-6 to 0)	0 (0 to 0)	0.002
Functional performance			
Baseline	25 (21.3 to 25.8)	24 (4 to 40.8)	
Day 1	44 (38.3 to 53.8)	36 (19.8 to 56.8)	
Scale difference at Day 1 from the baseline	19 (15.5 to 24)	11 (6 to 17.3)	0.001
Day 2	77 (73.3 to 82)	58 (37.3 to 78.8)	
Scale difference at Day 2 from the baseline	51.5 (43.3 to 52)	30 (22 to 38)	<0.001

Outcome measures

In a previous study, post operative symptoms are measured using the Memorial Symptom Assessment Scale (MSAS).[18] The MSAS consists of three dimensions: frequency, severity, and distress. For each dimension, the score can be ranged from 0 to 4. Thus, the lowest score is 0 while the highest is 12. In the current study, MSAS was adapted to be used to evaluate 5 symptoms e.g., pain, insomnia, abdominal distension, fatigue and anxiety rather than the original version.[19] Thus, in the current study we called this new tools as system assessment scale (SAS). The internal consistency coefficients of MSAS ranged from 0.58 to 0.88, and it is documented that the severity, frequency, and distress dimensions were highly inter-correlated.[18] The MSAS has been validated and tested to ensure its reliability with the Thai populations.[19]

For SAS, its test-retested reliability in the present study was found to be very high with a high and significant correlation (r, 0.99; P<0.001) amongst symptom score given by the patients in the current study .

Functional performance was measured using the Postoperative Functional Performance Questionnaire (PFPQ) which applied the Barthel Activity of Daily Living Index 20 and the unpleasant symptom theory, 21 Thai version. Its reliability, Cronbach's alpha correlation coefficient was 0.76 in the current study.

Statistical analysis

Descriptive statistics were used to analyze demographic characteristics and postoperative symptoms of the participants. Number and percentage were used to described categorical variable. Normally distributed data were summarized in term of mean together with standard deviation (SD) while median and interquartile range were used for non-normally distributed data. The outcomes between the two groups were compared using either t test or Mann Whitney U test where appropriate. The P for statistical significance was set at 0.05.

RESULTS

In the current study, there were 40 patients included in the study. No patient dropped out (Figure 1). In general, most of them were middle aged male with primary education. Majority of them were married (Table 1). More than half of the operations were open cholecystectomy as their diagnoses were gallstone or bile duct stone. The median operation time was 50 minutes with the mean incisional length of 12.5 centimeters. The characteristics of the two groups; experimental and control groups were relatively similar.

From Table 2, SAS was used to assess five symptoms; pain, insomnia, abdominal distention, fatigue, and anxiety of the patients. All of these symptoms tended to improved over time, better in Day 1 and Day 2 after the operations. However, the experimental group had better pain improvement at the end of Day 1 and Day 2 than that of control group ($P<0.001$ and $P<0.012$, respectively). The former group had better improvement in relation to insomnia at the end of Day 1 and Day 2 than that of later group ($P<0.001$ and $P<0.001$, respectively). Moreover, the former group had better improvement in relation to fatigue at the end of Day 1 than that of later group ($P<0.004$) and the former group had better improvement in relation to anxiety at the end of Day 1 and Day 2 than that of later group ($P<0.007$ and $P<0.002$, respectively). However, there were no differences between the experimental group and the control group regarding improvement in term of abdominal distention using SAS.

For functional performance which was assessed using PFPQ, the experimental group had better pain improvement at the end of Day 1 and Day 2 than that of control group ($P=0.001$ and $P<0.001$, respectively)

DISCUSSION

Major findings

Our finding showed that scores of symptoms decreased within two days. Moreover, the scores of pain, insomnia, fatigue, and anxiety were lower in the control group than that experimental group. However, there were no differences between the experimental group and the control group regarding improvement in term of abdominal distention using SAS. In terms of effects of music on abdominal distention, there was no study that was conducted on the effects of music on abdominal distention alone. In this study, the functional performance of the participants in the experimental group who received music therapy improved more than that of the control group.

Comparison with other studies

A previous quasi-experimental pretest and post-test design with 168 patients abdominal surgery, they found that on the second day after surgery the scores of severity and distress caused by pain during rest, breathing exercise, and position changes of the patients who listened to music were lower than those of the control group.[22] Furthermore, a previous randomized controlled with 112 patients after thoracic surgery, they found that the patients who received music therapy had lower pain, anxiety, SBP, and HR than those of without music therapy.[12] Also, previous studies have been carried out to examine the effects of music on pain and fatigue, a double- blind randomized clinical investigation with 90 patients undergoing gynecological surgery and found that the scores of severity of pain and fatigue of the experimental group were lower than of the control group.[23] Likewise, the effects of relaxation and music therapy in patients undergoing colon surgery and discovered that the participants who received music therapy had scores of pain and insomnia lower than those of the control group.[8] Moreover, in terms of anxiety, it has been documented that the experimental participants who received music therapy had lower scores of anxiety than those of the control participants.[24-26]

In this study, the scores of pain, insomnia, fatigue, and anxiety were lower in the control group than that experimental group. When considering the effects of music on postoperative functioning, the American Music Therapy Association has compiled research studies related to the effects of music therapy on daily living activities, and it could be seen that role performance, social roles, and interpersonal interaction promote postoperative recovery.[13] This may be because music therapy restores functioning of different bodily systems including respiratory system, blood pressure, and pulse rates.[12,22,27] It has been demonstrated that listening to music can increase activity of daily living, role performance, social activities and interaction with others, and activities to promote recovery after surgery.[13] A previous double-blind and randomized clinical investigation with 90 patients who underwent hysterectomy and found that the patients in music groups were mobilized (time to sitting up after surgery) significantly earlier compared to the patients in the control group, and they also had a shorter mean length of hospital stay of 4.2 days.[23] In this study, on the second day after the surgery, functional performance of the experimental group with music therapy was found to be at a high level.

Limitations of the study

There were several limitations of the current study; firstly, the sample size of the present study was small with quasi-experimental design, with small sample size, estimation of the effects from music therapy might not be precise and our design is also subjected to selection bias from non-randomization approach. Generalizability of our findings is then still limited. Moreover, and the music selection was not extensive, our findings were then concluded solely exclusively to the specific type of music used in the current study.

Conclusion and research implication

The result of present study suggested that music therapy in combination with medical treatment reduced postoperative symptoms as well as postoperative functional performance in patients undergoing abdominal surgery. However, it is recommended that further larger randomized controlled trial should be undertaken to shed more light on the effects of music therapy on symptoms and postoperative functional performance in patients undergoing abdominal surgery.

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I don't want you to be only
a doctor but I also want you
to be a man
A quotation by His Royal Highness Prince Mahidol of Songkla

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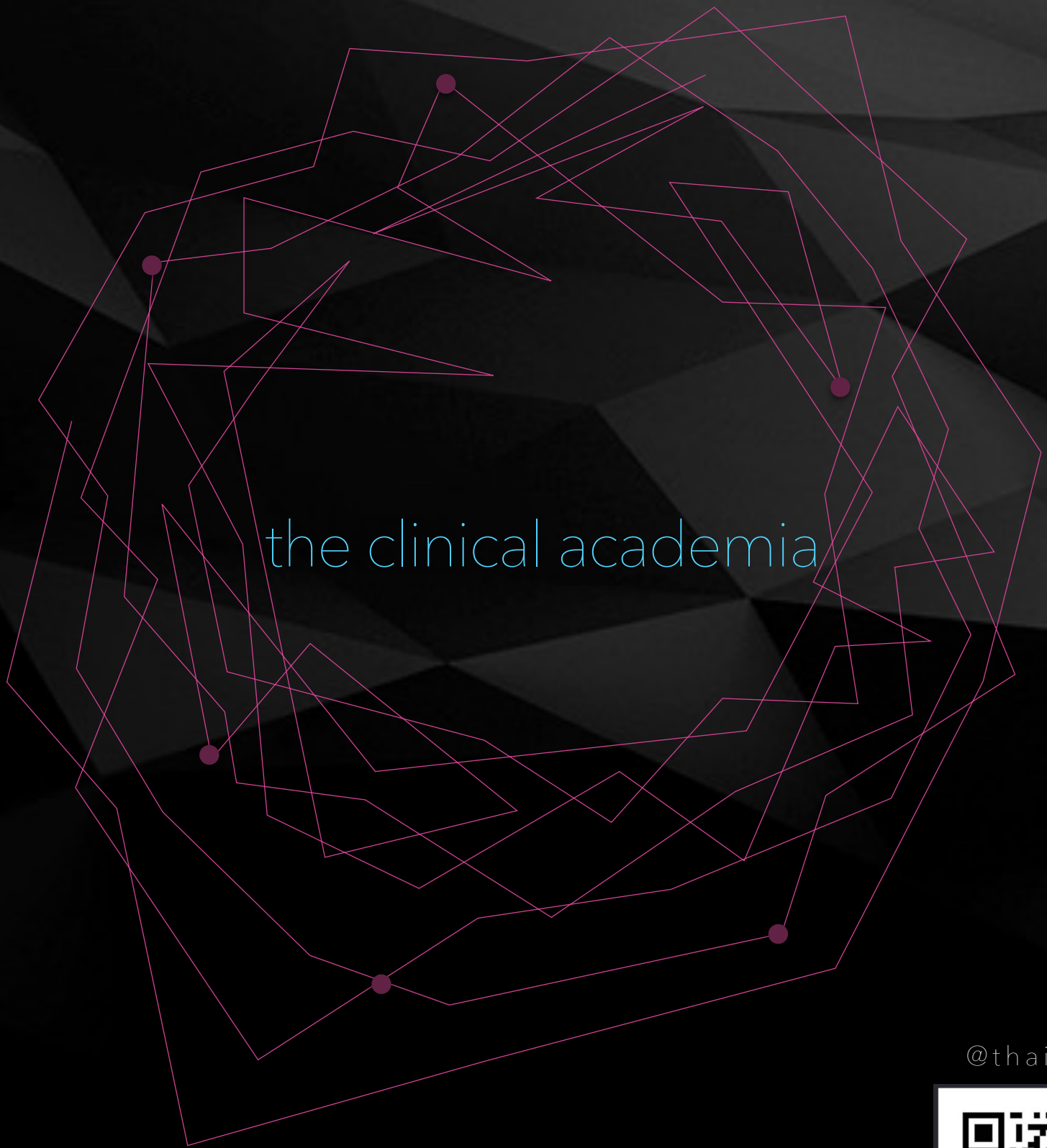
"I shall either find a way or make one"

-Hannibal Barca



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