

THE EFFECT OF USING RED BETEL LEAVES (*Piper crocatum*) FOR VAGINAL DISCHARGE AMONG FERTILE AGE WOMEN (FAW)

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ABSTRACT

This study aimed to determine the influence of the use of red betel leaf boiled water to cure vaginal discharge in fertile age women in Surau Gadang Work Area Health Public of Center Nanggalo Padang 2014. This research is a Quasi-Experiment. Research has been conducted in Surau Gadang Work Area Public Health Center of Nanggalo Padang in 2014 from June 3rd to July 2nd, 2014 on 34 samples with purposive sampling. Data collection used observation sheets and litmus paper. The data were analyzed using univariate and bivariate analysis by means of Wilcoxon test techniques. The pH before the use of red betel leaves boiled water showed results as an average of 2.00, SD 0000, Min 2 and Max 2. The pH after the use of red betel leaf boiled water obtained on average 1.21, SD 0410, Min 1 and Max 2. There are significant differences between the pH before and the pH after supplied of red betel leaf decoction to cure vaginal discharge in fertile age women (FAW) ($p\text{-value} = 0.000$). There are significant differences between the pH before and the pH after supplied of red betel leaf decoction to cure vaginal discharge. Suggested to the Health Public of Center Nanggalo Padang in order to disseminate and evaluate the implementation of the use of red betel leaf decoction water to cure vaginal discharge in fertile age women.

Keywords : *Red betel leaves, Flour albus, Piper crocatum*

INTRODUCTION

For a woman, maintaining cleanliness and a shape of the body is very vital, but there are still women who do not really care about the cleanliness of their reproductive organs. Most of the women are complaining about the diseases that disrupt daily activities, like vaginal discharge. Sometimes women who suffer from vaginal discharge would have psychiatric reactions, fear and excessive anxiety. This situation causes the women to feel less confident, so they withdraw themselves from the society which is ultimately dangerous to the individuals (Rozanah, 2003).

Health problem among women all over the world reveals that 33% of the total burden of disease affecting women is due to worst cases in the

reproductive age. This number is greater than the reproductive problems in men, which is only 12.3% of men in the same age group as women. The incidence of vaginal discharge among women in The world, Europe and in Indonesia is quite high. Vaginal discharge or *Fluor Albus* is women's abnormal vaginal secretion. Vaginal discharge or *Fluor Albus*, women's abnormal vaginal secretion is caused by an infection which is followed by itchiness in the vagina and around the outside of genital lips. As a result of this, she feels uncomfortable in the vaginal area (Yohana and Yovita, 2012).

In general, vaginal discharge can be caused by several factors: the lack of attention to the cleanliness of vaginal organs, washing the organs in the wrong way, tiring physical activity, not replacing the pads

properly during menstruation, less healthy life, under stressful psychiatric conditions, using excess soap to clean the sensitive organs, humid weather, changing partners often for doing sex activity, the condition of hormonal imbalance or often scratching the genital organs.

One of the other causes of the emergence of vaginal discharge is a fungal infection *Candida albican*. *Candida albicans* fungus is classified as a dimorphic fungus. *Candida albicans* is found in some parts of the body of a healthy person, such as in the mouth, esophagus, intestines, genital tract, feces, under the nails and skin. An infection caused by *Candida* is called *Candidosis*. Vagina *Candidosis* is vaginitis which is caused by *Candida albican* fungus. The main symptom of this infection is Flour Albus (vaginal discharge), often followed by itching. Typically, these infections occur due to pollution after defecation, from infected nails or water that has been contaminated by the fungus and is used to wash the genital organs (Hamid, 2012).

The effect of this abnormal vaginal discharge, if it is neglected without treatment, may result in the spread of the infection into the uterus, fallopian tubes and also can infect the ovaries. These conditions can damage the reproductive organs inside and can also lead to infertility. Therefore, keeping personal hygiene is important to prevent a vaginal discharge (Hediyani, 2012).

The research data about reproductive health shows that 75% of women in the world get a vaginal discharge and 45% of them may experience vaginal discharge as much as 2 times or more. From a study, it is evident that 3 of every 4 women in the world have experienced vaginal discharge at least once in their life. Every woman can be affected by these disorders without looking at the background and the profession (Bahari, 2012).

According to Muninjaya, Anak Agung Gede (2004) and Solikhah, Marsito, Nurlaila (2010) it is reported that in Indonesia the problem of vaginal discharge increased more than 75% among the women due to the moist weather in Indonesia. They are easily infected with the fungus *Candida albicans*, parasites such as pinworms or bacteria (*Trichomonas vaginalis*). They reported that in 2007 as many as 60% of

Indonesian women have experienced vaginal discharge, while in 2008 as many as 70% of Indonesian women have experienced vaginal discharge.

Vaginal discharge has been a problem for women for a long time. Not all of the women know about vaginal discharge and sometimes underestimate this issue. Vaginal discharge cannot be considered as unimportant because the effect can be very fatal if it is late to handle. Not only can it lead to infertility and pregnancy outside the womb, vaginal discharge can also be an early symptom of cervical cancer leading to death. Vaginal discharge also can affect a person's psychology because it tends to relapse and recur so that it can affect a person both physiologically and psychologically (Suhandi, 2012).

Treatment of vaginal discharge can be done only by using the pharmacological treatment methods or using drugs such as Gentian violet 1%, Nitronidazole 2x1 tablet (500 mg) for 10 days, antibiotics like ampicillin 3x1 tablet (500 mg) for 3 days in a row. But if the drug is consumed continuously, there would be side effects including nausea, abdominal pain, diarrhea, headache, irregular menstruation, allergic reactions (skin rash, itching) and can cause liver damage. Besides pharmacological treatment, non-pharmacological treatment or traditional medicine can cure vaginal discharge. One such traditional treatment is the use of red betel leaf to treat vaginal discharge, besides being a natural material is that red betel is very easy to use, easily available and do not require high costs like antibiotics.

Red betel leaf (*Piper crocatum*) is a medicinal plant which is very beneficial. The Anthocyanin content is high, indicating its antioxidant property. The red betel leaf is used to reduce vaginal discharge and keeping vaginal areas clean due to its antiseptic property. It is easy to start using red beetle leaf by boiling seven leaves then using the boiled water to rinse the genital organs (Ismawan, 2012). The taste of red betel leaves is very bitter. It has the strong aroma when compared with green betel. The red betel leaves contain flavonoids, polevenolad compounds, tannins and essential oils. The effect of an active substance in the red betel leaf can stimulate the central nerve and thinking power. The Red betel leaf extract is also capable of exterminating *Candida albican* fungus

causing sprue. Moreover, it can reduce secretions in the vagina, vaginal discharge and itching of the genitals, as well as wound cleansing (antiseptic effect).

Based on UPT Padang City Nanggalo District of Family Planning (2012), it was found that the number of fertile women in Kelurahan Surau Gadang was as many as 6259, in the Kelurahan Kurao Pagang it was 2,592 people and in the Kelurahan Gurun Lawas was as many as 1,236 people. Of the three villages in the district of Padang Nanggalo, Kelurahan Surau Gadang is the village that has maximum fertile age women with 6259 individuals. From the initial survey conducted interviewing 10 women in the fertile age with vaginal discharge in Surau Gadang work area at Health Public of Center Nanggalo Padang, it was found that only 3 (30%) of these fertile women used boiled water of red betel leaves to treat vaginal discharge. All of them agreed that red beetle leaf is a good treatment for vaginal discharge. But 7 (70%) of them did not use the red betel leaf to treat vaginal discharge because they did not agree with the treatment, as they think it is not a big deal.

Based on the information above, the researchers were interested in increasing the awareness regarding the influence of using red betel leaves boiled water for healing vaginal discharge among fertile age women (FAW) in Surau Gadang work area at Health Public of Center Nanggalo Padang.

RESEARCH METHODOLOGY

This research uses a Quasi-Experiment which is structured to determine an indication or effect, as a result of certain treatment. This study uses two groups as both pretest and for posttest design. The pretest is done before the application of boiled water red betel leaves and then after being given red betel leaves boiled water once a day for 7 days, the calculations was done again (post-test) to find healing on the vaginal discharge after the treatment.

Research has been conducted in Surau Gadang work area Public Health Center of Nanggalo Padang from June 3rd to July 2nd, 2014. The individuals in this study consisted of all fertile age women experiencing vaginal discharge. The total number of study group consisted of 107 individuals. Samples are calculated by using estimated proportion formula with formula finite population (Lemeshow, 1997):

$$\begin{aligned} n &= \frac{(Z_1 - \alpha / 2)^2 \cdot P(1 - P)N}{d^2(N - 1) + (Z_1 - \alpha / 2)^2 \cdot P(1 - P)} \\ &= \frac{1,96^2 \cdot 0,75(1 - 0,75)107}{0,1^2(107 - 1) + 1,96^2 \cdot 0,75(1 - 0,75)} \\ &= \frac{76,2}{1,06 + 0,75} \\ &= 43 \end{aligned}$$

Description:

$$Z_1 - \alpha / 2 = \text{value normal curve}$$

on trusting level 95% = 1,96

$P =$ vaginal discharge case proportion 75% = 0,75

$N =$ population

$d =$ precision or trusting level 10% = 0,1

So, the total of the samples in this study is 43 individuals.

1. Inclusion Criteria

- Fertile age women who reside in Kelurahan Surau Gadang at Public Health Center of Nanggalo Padang.
- Fertile age women who are willing to be respondents
- Fertile age women who experienced vaginal discharge with a pH of ≥ 5
- Fertile age women who were currently in that place where the research was held.

2. Exclusion Criteria

- Fertile age women who experienced vaginal discharge with a pH ≤ 5
- Fertile age women who were not willing to be respondents.

Based on the inclusion and exclusion criteria above, it was found that eligible sample quantitates to as many as 34 people.

The sampling technique used in this research is the purposive sampling technique which means that the researchers during initial screening went to the respondent's houses to conduct a pre-test with litmus paper on fertile age women with vaginal discharge. Then the sample is selected based on the inclusion criteria.

MATERIAL AND METHODS

a. Tools and materials:

- 1) 7 fresh medium sized red betel leaves
- 2) 1 liter of clean water

b. Procedure of Preparation and Use:

- 1) The red betel leaves was washed until they are clean
- 2) 1 liter of water was boiled
- 3) After 15 minutes the red betel leaves boiled water was lukewarm
- 4) This red betel leaves boiled water was then used from the front to backward by flushing on vaginal area
- 5) This was repeated once every day after a bath or when going to bed at night.

The research instruments are the tools that will be used for collecting data (Notoadmojo, 2010). In collecting data, researchers used observation sheet and litmus paper.

The data processing is done by using computers and the steps as follows: checking the data (Editing), encoding the data (Coding), entering the data (Entry), and data cleaning (Cleaning). The data were analyzed by using univariate and bivariate analysis to determine the average value, mean, median, maximum value, minimum value and standard deviation both in pretest and post-test. Bivariate analysis was used to see the impact of using red betel leaves boiled water for vaginal discharge healing. This study was conducted only on an average of two values by using the bivariate test which is the average of two different tests and test used non-parametric statistical test with Wilcoxon Test, $p \text{ value} > \alpha (0.05)$.

RESULTS

Result of using red betel leaves boiled water for healing vaginal discharge to Fertile Age Women (FAW) in Surau Gadang Work Area at Health Public of Center Nanggalo Padang 2014:

Univariate Analysis

pH of vaginal discharge before and after the use of red betel leaves boiled water. Table 1.

Table 1.

The Vaginal Discharge pH distribution before and after the use of red betel leaves boiled water to fertile age women (FAW) in Surau Gadang Work Area at Health Public of Center Nanggalo Padang 2014

Variable	Mean	SD	Min	Max	N
pH Before Usage red betel leaves boiled water.	2.00	0.000	2	2	34
Vaginal discharge pH after Using red betel leaves boiled water	1.21	0.410	1	2	

Bivariate Analysis:

Before analyzing with bivariate analysis, it must be done firstly by the normality test named Kolmogorov - Smirnov test. The p -value for pH will be determined by using red betel leaves boiled water 0.000 and pH after using red betel leaves boiled water 0.000. Thus it can be stated that the pH before and after the application of red betel leaves boiled water is not normal in distribution. Therefore non-parametric statistical test will be conducted, namely Wilcoxon test. The data will be further processed by bivariate analysis to determine whether there is an influence of using red betel leaves boiled water to cure vaginal discharge. The results of the bivariate analysis by the researchers are:

The average pH of vaginal discharge among fertile women age in the first measurement is 2.00 with a standard deviation of 0.000. On the second measurement after the use of red betel leaves decocted water, it can be found that average pH of vaginal discharge among fertile women age is 1.21 with a standard deviation of 0.410. Statistical test results obtained $p \text{ value} = 0.000$. It can be concluded that there is a significant difference between the pH before and the pH after using red betel leaves decocted water among the experiment group.

DISCUSSION

Based on the research result on the influence of the use red betel leaves boiled water to cure vaginal discharge in fertile age women (FAW) are as follows:

a. pH of Vaginal Discharge Before:

The use of Red Betel Leaves Boiled Water Based on the research results, it can be concluded that vaginal

discharge pH before being given red betel leaves boiled water was 2.00 on average, SD 0000, Min 2 and Max 2.

According to the theory of Bahari, (2012), one of the causes of vaginal discharge is a *Candida albicans* fungal infection. *Candida albicans* fungus is classified as a dimorphic fungus, which enjoys a wet and humid place. The infection caused by *Candida* is called Candidiasis. Vaginal Candidiasis is vaginitis which is caused by the *Candida albicans* fungus. Usually, the infection is caused by contamination after defecation or polluted water used to wash the genital organ. Furthermore, Yohana and Yovita (2012) stated that the discharge caused by the infection is usually accompanied by intense itching in the vagina and outside around the genital lips so that women feel uncomfortable in that area.

According to the researchers' analysis, vaginal discharge in the fertile age women is not only caused by the lack of hygiene of the genital organs but also caused by the *Candida albicans* fungus. From the results of research among the fertile age women who suffered from vaginal discharge, it can be said that the infection is due to bad habit of using damp and tight clothes. This proved that the measurement of $\text{pH} \geq 5$ leads to vaginal discharge accompanied by itching in the vagina and around the outside of genital lips.

b. pH of Vaginal Discharge After The Use of Red Betel Leaves Boiled Water

Based on the research results it can be concluded that vaginal discharge pH after being given red betel leaves boiled water was 1.21, SD 0410, Min 1 and Max 2.

The results of this study are consistent with Dina (2012) on the use of red betel leaves boiled water to treat vaginal discharge. The results showed that 70% of women are cured after the use of the red betel leaf. The recovery in most of the fertile age women (FAW) after being given red betel leaves boiled water was due to the eugenol present in it that is capable of eradicating the *Candida albicans* fungus. In accordance with the theory of (Waskito, 2008) red betel leaf is widely used to treat various diseases, such as to lower the pH of the vagina and treat vaginal discharge. The eugenol is an analgesic which relieves the pain. There is also tannin content in the leaves which are beneficial to reduce the secretion of fluid in the vagina.

According to Sadewo, (2002), the efficacy of red betel leaf lies in the fact that it reduces vaginal discharge and keep the sensitive organs clean because red betel leaves have one of the advantages of being antiseptic. Boiling 7-10 red betel leaves and then using the boiled water to rinse the genital organs is consequently very effective. The boiled water contains antiseptic property which can be used to cure vaginal discharge and odor around it.

Furthermore Bahari, (2012) stated that in general, vaginal discharge can be caused by several factors, like the apathetic of cleanliness of the vaginal area, flushing it in wrong way, tiring physical activity, not replacing the pads properly during menstruation, less healthy life, under stressful psychiatric conditions, using excess soap to clean the sensitive organs, the weather especially the humid conditions, often changing partners for doing in sexual activity, hormonal imbalance, scratching the genital organs, and wearing tight underwear of synthetic materials.

According to the researcher's analysis after using red betel leaves boiled water, the fertile age women feel happy because the discharge begin to diminish. FAW also stated thar after flushing with the decoction, they no longer experienced itching and discomfort in their genital areas. There is also tannin content in the leaves that are beneficial to reduce the secretion of fluid in the vagina. This proved that red betel leaf boiled water is effective for treating vaginal discharge, which is evident from the measurement results obtained with $\text{pH} \leq 5$. Therefore, it is recommended to the woman of fertile age (WUS) to use red betel leaves boiled water to treat vaginal discharge.

c. pH of Vaginal Discharge Before and After The Use of Red Betel Leaves Boiled Water

The average pH of vaginal discharge before and after the use of red betel leaves boiled water in the first measurement was 2.00 with a standard deviation of 0.000. On the second measurement or after using red betel leaves boiled water the pH is 1.21 with a standard deviation of 0.410. It can be concluded that there is a significant difference between the pH of vaginal discharge before and after the use of red betel leaves boiled water. Effective use of the red betel leaf boiled water is very beneficial for the fertile age women

(FAW) because they have a partner. Therefore their partners are susceptible to get infected by the vaginal discharge. Therefore, the germ in the discharge can cause venereal disease that may infect their partner. This can cause unfavorable impact on the fertile age women. According to Hediyan, (2012), if vaginal infection remains untreated then the infection might spread into the uterus, fallopian tubes and also can be infect the ovaries. These conditions can damage the reproductive organs inside and can also lead to infertility. Therefore, it is crucial to maintain personal hygiene to prevent vaginal discharge. Therefore, it is highly recommended to fertile age women (FAW) who experience vaginal discharge to use red betel leaves boiled water in healing.

CONCLUSION

This study would help to develop skills in applying knowledge that is already obtained in college and to get more understanding about this matter. It is expected that the nursing education institutions must implement health education, particularly on the use of red betel leaf to cure vaginal discharge. The heads and nurses at Health Public of Center Nanggalo Padang can disseminate, implement and evaluate the implementation of the use of red betel leaf decoction water to cure vaginal discharge in fertile age women. This data can be used as reference material or for comparison in future studies with the same problem with different variables.

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A CROSS-SECTIONAL SURVEY OF KNOWLEDGE AND ATTITUDE TOWARDS HIV/AIDS PATIENTS AMONG NURSING STUDENTS IN TEACHING HOSPITAL

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ABSTRACT

HIV/AIDS is a matter of concern and has become a pandemic disease that threatens the world population. It has remained one of the priorities in global public health challenges. Caring for people with HIV/AIDS requires clinical expertise as well as high-quality skills for health care providers. The purpose of the study was to examine knowledge and attitude on HIV/AIDS patients among nursing students. A cross-sectional study was conducted in Public University at West Coast Malaysia. The 126 respondents of nursing students agreed to participate in the study using a self-administered questionnaire that was designed and modified after reading and referring to articles, books, and journals. The results of the research revealed that nursing students, in general, have a satisfactory knowledge (mean score 30.71), but had a moderate attitude toward HIV/AIDS patient with total mean score 2.34. Most of the students (89.3%) get the knowledge regarding HIV/AIDS through the internet. The majority of the students knew that blood transfusion (99.4%) and sharing needles/syringe (99%) were the higher sources HIV/AIDS modes of transmission. Most of the students agreed that people with HIV/AIDS should be treated in society with support from the community (97.0%). Although the knowledge level of nursing students seems to be satisfactory, but they still showed the moderate attitude towards HIV/AIDS patients. Thus, structured education programmes should be conducted by nursing faculty to ensure that nursing students gain the necessary accurate knowledge and an appropriate attitude towards the care of HIV/AIDS patients.

Keywords: *Moderate attitude towards HIV/AIDS patients, Human Immunodeficiency Virus, disease fighting T cells.*

INTRODUCTION

AIDS (Acquired Immuno Deficiency Syndrome) begins with exposure to the Human Immunodeficiency Virus (HIV). This virus is an acquired infection, with an estimated 42 million people infected globally (Green, 2007). A person with HIV/AIDS can be infected for many years and not show any symptoms (American Pharmaceutical Companies, 1997). A person infected with Human Immunodeficiency Virus (HIV) can cause progressive deterioration and dysfunction in cell-mediated immunity and its most severe stages in the disease call AIDS (Monahan *et al.*, 1994). It means that AIDS occurs when an HIV-infected person develops a

life-threatening condition (e.g. Cancer, infections) or when the number of disease-fighting T cells becomes dangerously low.

The total of 34.0 million numbers of people living with HIV, 2.7 million people are newly infected with HIV and 1.8 million deaths due to AIDS (Global summary of HIV/AIDS epidemic, 2010). In Malaysia, the first three cases of HIV were detected in 1986. As of December 2009, after more than 20 years into the HIV epidemic in Malaysia, the country has recorded a total of 87710 persons with HIV. An estimated 105, 439 people are currently living with HIV. In addition to that, a total of 13394 AIDS-related deaths has been reported as of

2009. The HIV epidemic in Malaysia is mainly driven by injecting drug use and heterosexual transmission (MOH and WHO, 2009).

Among the health care providers, nurses have the most frequent and direct physical contact with patients of all diagnostic categories and are commonly assigned to hospital units in which they cannot easily remove themselves from patients. Stigmatization to the AIDS had occurred among nurses and other health care providers; this may also probably influence the quality of the care they provide (Evian, 2000). Up to the present, studies focusing on Nurses' experiences of caring for patients with HIV/AIDS have been done in numerous countries, but there is little nursing research relating to HIV or AIDS in Malaysia. Therefore, it is the correct time to focus again on knowledge and attitude towards the care of HIV/AIDS patients among nursing students.

With the growing incidence of HIV/AIDS, nurses and other healthcare professionals in this country must be increasingly caring for patients with HIV/AIDS. This raises questions about how knowledgeable nurses are in relation to information related to HIV/AIDS and what are their attitudes towards patients with this syndrome.

METHODOLOGY

Study Design

A cross-sectional study was conducted at a school of the nursing teaching hospital, Kuala Lumpur, Malaysia with the target group of diploma nursing students from March until June 2012. The aims of this study were to determine nursing students' knowledge and attitudes towards HIV/AIDS patients. The sample size was calculated using Krejcie and Morgan 1970 and total 169 of nursing students were participating in this study.

Study Instrument

The data were collected using a self-administered questionnaire. The questionnaire was designed and modified after reading and referring to articles, books and journals and to assess the level of knowledge and explore attitude of nursing students regarding HIV/AIDS patient. The questionnaire consists 3 sections: section 1 is demographic data (age, gender, ethnicity, educational level and current semester), section 2 is HIV/AIDS knowledge which divided into 5 questions and each question contains sub-question except question number 2 using the option "Good/ Yes/ True", "Some/Not sure" and "Nothing/No/False". A

total score for knowledge was obtained by adding the points given for each answer started from question number 3. For each correct answer was given a score of 1 while an incorrect answer was score 0. The minimum and maximum scores for total knowledge score were 0 and 42 respectively. The higher score indicated a satisfactory level of knowledge. Section 3 composed of question-related to attitude toward HIV/AIDS patients. The question was divided into 5 main questions and also contains a sub - question. Total score on attitude is 1.0 to 3.0 in which higher score indicated good attitude. The questionnaire was pre-tested among 10 of diploma nursing students and after analyzing the data the Cronbach's alpha coefficient was calculated to assess the internal consistency of the questionnaire ($\alpha = 0.74$).

DATA ANALYSIS

Data was analyzed using Social Package Statistical Software (SPSS) version 16. The data were evaluated by percentage, frequency, and Chi-square test.

RESULT

A total of 169 diploma nursing student has returned the questionnaires with a 100% response rate. The demographic characteristics of the respondents are listed in Table 1. A total of 169 respondents was sampled, with the majority of the respondents were female (92.3%) and 89.9% of the respondents were Malays with mean age 20.64 (SD=1.66) of years old. Most of the respondents' education levels were SPM (79.3%). 51.5% of respondents were from semester 3 while the remaining 48.5% were from semester 5.

Table 1. Demographic characteristics of respondent (N=169)

	Frequency	Percent (%)	Mean (±SD)
Gender			
Male	13	7.7	
Female	156	92.3	
Ethnicity			
Malay	152	89.9	
Others	17	10.1	
Education level			
SPM	134	79.3	
STPM	29	17.2	
Certificate	4	2.4	
Diploma	2	1.2	
Current semester			
3	87	51.5	
5	82	48.5	
Age			20.64 (1.66)

Table 2 showed the internet was the major sources of information for students to get knowledge regarding HIV/AIDS (89.3%), followed by government information (79.3%), newspaper (74.0%), and television (72.2%).

Statement of HIV/AIDS information

As listed in table 3 the students believed that the HIV virus can pass to someone during sexual intercourse (97.6%), HIV/AIDS is caused by a virus (97.0%), HIV/AIDS can reduce the body's protection (95.3%), HIV/AIDS leads to death (94.1%), a pregnant woman with HIV virus can be transmit the virus to her baby (90.5%) and there is no cure for HIV/AIDS (80.5%). However, still students demonstrated inadequate knowledge regarding HIV/AIDS information, with 16.6% of the students mentioned that a vaccine is available to public for HIV/AIDS protection, 32.5% of students believed that a person can be infected with the HIV virus but not have the AIDS

disease and 3.6% of a student's mentioned that HIV/AIDS can be cured.

Table 2. Distribution of respondents according to Sources Contributed to Knowledge of HIV/AIDS (N=169)

Sources contributed	Good n (%)	Some n (%)	Nothing n (%)
Internet	151(89.3)	18(10.7)	0
Government Information	134(79.3)	35(20.7)	0
Newspaper	125(74.0)	44(26.0)	0
Television	122(72.2)	45(26.6)	2(1.2)
School-Secondary or Primary	45(26.6)	102(60.4)	22(13.0)
Radio	43(25.4)	103(60.9)	23(13.6)
Friends	37(21.9)	113(66.9)	19(11.2)
Family	29(17.2)	104(61.5)	36(21.3)

Table 3. Distribution of respondents according to Statement of HIV/AIDS information (N =169)

Statement	Correct answer	True n (%)	Not Sure n (%)	False n (%)
HIV/AIDS virus can pass to someone during sexual intercourse	True	165(97.6)	4(2.4)	0
HIV/AIDS caused by a virus	True	164(97.0)	2(1.2)	3(1.8)
HIV/AIDS can reduce the body's natural protection against disease	True	161(95.3)	5(3.0)	3(1.8)
HIV/AIDS leads to death	True	159(94.1)	6(3.6)	4(2.4)
Pregnant women with HIV virus can be transmitted the virus to her baby	True	153(90.5)	9(5.3)	7(4.1)
No cure for HIV/AIDS	True	136(80.5)	27(16.0)	6(3.6)
Condom are effective means of reducing HIV transmission	True	93(55.0)	49(29.0)	27(16.0)
A person with HIV virus can look healthy and well	True	99(58.6)	32(18.9)	38(22.5)
A person can be infected with HIV virus but not have the AIDS disease	True	60(35.5)	54(32.0)	55(32.5)
A vaccine available to public for HIV/AIDS protection	False	28(16.6)	46(27.2)	95(56.2)
Spermicidal jelly, foam & cream are effective in reducing HIV transmission	False	11(6.5)	46(27.2)	112(66.3)

Respondents' attitude towards people with HIV/AIDS

As shown in Table 4, the majority of the students agreed that people with HIV/AIDS should be treated in society by supporting in the community (97.0%) and should carry AIDS cards (71.0%). However, they

disagreed with the fact that people with HIV/AIDS must be treated by prohibiting from a certain job (53.3%) quarantine (69.2%), complete removal from society (87.0%) and remove AIDS children from school (87.6%).

Table 4. Distribution of respondents according to attitude towards people with HIV/AIDS(N=169)

Statement	Correct answer	Agree n (%)	Neither n (%)	Disagree n (%)
Supported in the community	Agree	164 (97.0)	1 (0.6)	4 (2.4)
Should carry AIDS cards	Agree	120 (71.0)	18 (10.7)	31 (18.3)
Hospitalized	Disagree	80 (47.3)	36 (21.3)	53 (31.4)
Treated no differently than other disease sufferers	Agree	81 (47.9)	32 (18.9)	56 (33.1)
Prohibited from certain job	Agree	43 (25.4)	36 (21.3)	90 (53.3)
Quarantine	Disagree	36 (21.3)	16 (9.5)	117 (69.2)
Complete removal from society	Disagree	14 (8.3)	8 (4.7)	147 (87.0)
Remove AIDS children from school	Disagree	10 (5.9)	11 (6.5)	148 (87.6)

Table 5 showed no statistically significant difference between the level of knowledge with demographic

characteristics-gender ($p=0.55$), ethnicity ($p=0.36$), education level ($p=0.39$) and current semester ($p=0.88$)

Table 5. The association level of knowledge score with demographic characteristics (N=169)

	Level of knowledge score		χ^2	p
	12-24 (moderate)	>24 (high)		
Gender				
Male	1 (4.5%)	12 (8.2%)	0.35	0.55
Female	21 (95.5%)	135 (91.8%)		
Ethnicity				
Malay	21 (95.5%)	131 (91.8%)	0.85	0.36
Others	1 (4.5%)	16 (10.9%)		
Education level				
SPM	17 (77.3%)	117 (79.6%)	3.04	0.39
STPM	4 (18.2%)	25 (17.0%)		
Certificate	0 (0.0%)	4 (2.7%)		
Diploma	1 (4.5%)	1 (0.7%)		
Current semester				
3	11 (50.0%)	76 (51.7%)	0.02	0.88
5	11 (50.0%)	71 (48.3%)		

Table 6 also showed no statistically significant difference between the level of attitude with gender ($p=0.58$), ethnicity ($p=0.22$), education level ($p=0.39$)

and current semester ($p=0.39$). However, there a significant association between knowledge with information about HIV/AIDS ($p=0.01$).

Table 6. The association level of attitudes score with demographic characteristics (N=169)

	Level of Attitude score		χ^2	P
	Low	Moderate		
Gender				
Male	0 (0.0%)	10 (8.3%)	1.09	0.58
Female	9 (100%)	110 (91.7%)		
Ethnicity				
Malay	9 (100%)	107 (89.2%)	8.28	0.22
Others	0 (100%)	13 (10.8%)		
Education level				
SPM	8 (88.9%)	98 (81.7%)	3.04	0.39
STPM	1 (11.1%)	19 (15.8%)		
Certificate	0 (0.0%)	3 (2.5%)		
Diploma	0 (0.0%)	0 (0.0%)		
Current semester				
3	4 (44.4%)	63 (52.5%)	4.15	0.39
5	5 (55.6 %)	57 (47.5%)		

Table 7 shows that the respondents' had a good level of knowledge about HIV/AIDS with total means score

30.71 and the students had a moderate attitude towards HIV/AIDS patient with total mean score 2.34.

Table 7. Mean rank total score attitude and knowledge (N=169)

Total score	Mean	Std. Deviation
Knowledge	30.71	4.48
Attitude	2.34	0.21

DISCUSSION

Respondents' Knowledge about HIV/AIDS

The present study aimed to assess knowledge and attitudes towards HIV/AIDS among respondents' and the results of this study showed that they had a satisfactory level of knowledge about HIV/AIDS. Our finding is similar to another study conducted by

Lohrmann *et al.*, (2000) that found the nursing students had a rather high knowledge level concerning AIDS. From our study it is evident that our respondents had sufficient information towards concern about HIV/AIDS (79.9%). In contrast to a study done by (Christina and Konstantinos, 2012), which mentioned in their study that nursing students had inaccurate and insufficient knowledge on HIV/AIDS. The present

study conducted on nursing students indicated the majority of the respondents reported the internet, government information, newspaper and television as primary sources of information with respect to HIV/AIDS. This result is similar to some other studies related to this topic.

Statement of HIV/AIDS information

The majority of the participants expressed an interest in additional information and education as a way to result in improvements. Scientific books, seminars, colleagues, conferences, television programs and journals and newspapers were the most used by nurse students as information resources regarding HIV (Neriman *et al.*, 2012). Similar results were also found in Serlo and Aavarianne, (1999), study where they found most information concerning HIV/AIDS had been gained from TV and newspaper. In addition, the findings indicate that the majority of the respondents were aware of the nature of HIV/AIDS. More than half of the respondents believed that condom is an effective means of reducing HIV/AIDS transmission. A condom provides protection from HIV and sexually transmitted diseases as well as provided contraception method. One of the previous studies (Weller and Davis, 2002) found that overall effectiveness, the proportionate reduction in HIV seroconversion with condom use, is approximately 80%. Proper knowledge regarding possible routes of transmission is not crucial for decreasing the infection rate, but it is also important to dispel persistent myths as partial knowledge can further prolong the risk of infection (Babakian *et al.*, 2004). Overall, a majority of respondents in our study gave correct responses about the methods of transmission of HIV, especially regarding blood transfusion, sharing needles and syringes and heterosexual activity which agree with the findings of other studies (Hayyawi *et al.*, 2010). However, still few respondents believed that HIV could be contracted through biting insect, sharing bath towels, using a public toilet and kissing on the cheek, which is similar to another study (Christina and Konstantinos, 2012).

Respondents' attitude towards People with HIV/AIDS

The positive attitude of health staff (especially nurses) regarding HIV/AIDS has an importance on the

quality of care provided for HIV/AIDS patients. In this study it is concluded that the attitude of a nursing student towards HIV/AIDS who participated in this research is positive. Similar results were found in other studies (Zeren *et al.*, 2012), where it was mentioned that nursing student, in general, has a positive attitude towards HIV/AIDS. In contrast, a study (Juan *et al.*, 2004) found that the attitude of nurses or nursing student towards HIV/AIDS was negative. Oyeyemi *et al.*, (2006) believed that the negative attitude of nurses results from their fear of HIV/AIDS and social implication. Surprisingly, nearly half of the respondents mentioned that they had their right not to nurse or care for HIV/AIDS patients and 30.8% of respondents refused to interact with a patient's family and friends. Pickles *et al.*, (2009) reported that the fear of contracting HIV/AIDS from people being cared for was the greatest concern for nursing students. This fear of contagion was the major factor behind the reluctance of some nursing students to care for people with HIV/AIDS. Those from the USA recommend increased HIV/AIDS education as a means of reducing the nursing students' fear of contracting HIV when giving nursing care (Earl and Penny, 2003; Petro-Nustas *et al.*, 2002).

According to the findings, majority of the respondents stated that they would be anxious about the HIV/AIDS care. This finding was similar to the findings of another study (Peate *et al.*, 2002). This research revealed that there is not a meaningful difference between demographic data with the level of knowledge and attitude of nursing students towards HIV/AIDS patients. Similar to a study conducted by Goldenberg and Laschinger, 1991 that stated no association between nursing students' age and attitude towards AIDS patients. A good knowledge should create a positive change in attitude towards nursing students. Otherwise, increase in theoretical knowledge is not sufficient without any practice. Further education programs on HIV/AIDS should be created or restructured by the nursing school or nursing faculty for their nursing students in order to prepare them to be a professional healthcare staff in the future. The sample size was relatively small and was limited which makes it impossible to generalize the study results outside of our institution. Further limitations of the study was that it was conducted on one group of ethnicity in one

university only, and thus the general ability of the findings is not possible.

CONCLUSION

HIV/AIDS has emerged as one of the most serious public health problems in the world. It has a considerable effect on the health care system and it is unlikely that the problems created by this disease will diminish. In fact, it is far more likely that they will increase. Nurses are the largest group in the health care

system, most frequently and directly is in physical contact with HIV/AIDS patients. In an effort to increase knowledge and improve attitudes towards and willingness to provide nursing care for patients with HIV/AIDS, the nursing school needs to restructure their nursing curriculum programs to ensure that nursing students gain the necessary accurate knowledge and an appropriate attitude towards the care of HIV/AIDS patients.

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MANAGEMENT BEHAVIOUR OF CAREGIVERS FOLLOWING PAEDIATRIC ASTHMA EDUCATION PROGRAMME (PAEP)

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ABSTRACT

Background: The prevalence of asthma among children is common. In Malaysia, the clinical observations have demonstrated that many children with asthma were not properly assessed and did not get proper treatment. Hence, poor asthma control could cause disruption to the child's ability to get enough sleep, to pay attention, to participate in school activities and thus affecting their quality of life.

Aim: The objective was to determine the effect of PAEP to change the quality of life of children, parents' management practice and parents' technique of using an inhaler for their asthmatic children.

Methods: The study design was a one group pre-test-post-test intervention study. The respondents consisted of 78 parents with asthmatic children, aged between 8 to 12 years old. Parents were required to answer the Paediatric Quality of Life Inventory Questionnaire, Management Behaviour Survey for Familial Caregivers and skills of inhaler technique using the checklist at the Paediatric Clinic Hospital USM. Following that were given a date to attend PAEP and were assessed two months later for post-intervention. The analysis for PedsQL, Management Behaviour Survey for Familial Caregivers and skill of inhaler technique was done by using paired *t*-test. A total of 70 parents completed the study.

Results: The study showed that the mean age for children with asthma was 9.31 years. PedsQL pre-intervention scores were 75.8%, and post-intervention 82.8%. The Mean of Management Behaviour Survey for Familial Caregivers scores increased from 53.16 to 62.33 pre-intervention and post-intervention respectively. While the mean skill scores for inhaler user had increased from 3.43 to 7.13 for the MDI with a spacer. The findings showed statistical significance with *P*-values (<0.001) for PedsQL, Management Behaviour Survey for Familial Caregivers and skill scores for inhaler use.

Conclusion: The PAEP had improved the children's quality of life, parents management practice and inhaler skills among parents with asthmatic children.

Keywords : Prevalence, asthma, quality of life

INTRODUCTION

Asthma is a chronic inflammatory syndrome that affects children over the world. It is a heterogeneous condition characterized by persistent symptoms such as dyspnea, chest tightness, wheezing and cough that can lead to airway obstruction, which is either partially or completely reversible using bronchodilator (Ball, 2003).

Consistent management of asthma at home is necessary to achieve control. This includes the ability to identify early signs and symptoms of an asthma attack

and administer the metered dose inhaler correctly. It is vital for family members to equip themselves with correct knowledge on asthma. Asthmatic children experience functional impairments such as impaired physical activity, school functioning and avoidance of social activities. Hence, good caregiver management behaviour is vital for a better care and quality of life. Caregiver management behaviour plays an important part in asthma management. Their practice at home can improve their child health status. Asthma management depends on the parents until the child can manage on

their own.

Studies have shown that the majority of parents have a limited understanding of their asthmatic children (Conway, *et al.*, 1999; Fadzil, A., *et al.*, 2002 & Norzila, M. Z., *et al.*, 2000). Some parents have adequate knowledge on the causes and symptoms of asthma but are less informed about the management of asthma (Bahari *et al.*, 2005). The majority of parents get to know about asthma through their family members who are suffering from asthma or after seeing someone having an asthmatic attack (Bahari, 2005). Al Binali *et al.*, (2010) identified that older mothers were more knowledgeable than the younger mothers. Jalaludin *et al.*, (2002) showed that a total of 70.6% of families of children with asthma in Kuala Lumpur and 76.3% in Terengganu used carpet in the house. Nookong, *et al.*, (2005) found that caregivers tend to pay attention to avoid allergic triggers inside and outside the home more than paying attention to the general environmental control

Short education program improve knowledge and skill but some skills need more emphasizing and training (Aziz *et al.*, 2006). Training on identifying asthma triggers, recognizing early warnings signs, and correct technique of metered dose inhaler use are important to achieve a better quality of life. Asthma is related to the significant impact on the quality of life of the children with asthma and their caregivers (Juniper *et al.*, 1997). The aim of this study is to determine the effect of a newly developed Paediatrics Asthma Education Programme (PAEP) on parents' management behaviour in children with asthma.

METHODOLOGY

Study Design and Participants

This study utilized a pre-post single group study design to investigate the effect of PAEP on the caregiver management behaviour. Parents of children aged 8 to 12 years old with asthma who had been under follow-up at the paediatric clinic of Hospital Universiti Sains Malaysia was identified. A total of 78 parents were enrolled in the study. The inclusion criteria were: (1) Parents of asthmatic children of age between 8 to 12 years old (2) Each child had been on at least one health care visit for asthma in the preceding year (3) Each child had been prescribed medication for asthma on a daily basis (4) The parents had to be contactable by

phone (5) The primary caregiver speaks Malay language. On the other hand, the exclusion criteria were: (1) The child had other health problems (heart diseases, cancer, diabetic or other chronic condition) (2) The parents refused to participate or not consented.

Paediatrics Asthma Education Programme (PAEP)

PAEP is a programme delivered to parents through conventional lecture and brochures. Patients' education is considered an essential component of asthma prevention and control. The development of PAEP was based on the guideline from Academy of Medicine of Malaysia *et al.* (2015). This programme takes two hours to complete and is delivered via lecture and clinical demonstrations. Attractive graphics and a suitable combination of colours are used to stimulate their interest, supported by two brochures (asthma action plan and how to use an inhaler) that are designed to enhance their understanding and memory after the programme.

This programme emphasizes the importance of practical demonstrations, covering the concept of asthma as an inflammatory disease, symptoms and signs of asthma attacks, trigger factors and how to identify them, the concept of two classes of medication i.e. reliever and prophylaxis medication, the recognition of acute attacks, the asthma action plan and the demonstrations on inhaler techniques. PAEP also includes a small group discussion among parents (a maximum of 20 parents per group) to allow sharing of experience and feedbacks on inhaler techniques and exchanging ideas on managing an asthmatic child during the session.

Measurement Tool

This study used a self-administered questionnaire set, consisting of two main parts. Part 1 consists of questions on socio-demographic information of the child and the parents. Part 2 assesses the caregiver management behaviour using the Malay version of Management Behaviour Survey for Familial Caregivers (MBSFC-M) questionnaire, which was adapted from Management Behaviour Survey for Familial Caregivers (MBSFC) (10). The original questionnaire has 20 items, using a five-point Likert-type scale ranging from 1-5 (1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = always) and an option to

indicate the item is not applicable (8 = does not apply). The questions are divided into three sections, namely prevention/adherence to treatment (12 questions), assessment and monitoring (four questions) and exacerbation-intervention strategies (four questions). The higher score (closer to 5) indicates better management behaviour of asthma. The reported internal consistency reliability of the original MBSFC was Cronbach's alpha = 0.73.

The details of the translation and validation processes of MBSFC-M are reported elsewhere. During the translation process, MBSFC-M underwent forward-backward translation procedure, expert panel review, and field pre-test to come up with a preliminary version of the questionnaire. This was followed by a validation study among a sample of 37 parents of asthmatic children, which resulted in the localized questionnaire consisting of 15 items for the three sections: prevention/adherence to treatment (eight items); assessment and monitoring (three items) and exacerbation-intervention strategies (four items). Five items were deleted in the Malay version as the items were not applicable locally. The internal consistency reliability of MBSFC-M was Cronbach's alpha = 0.83.

Procedures

In the pre-intervention phase, the recruited parents were asked to complete the questionnaire set. The parents were then scheduled to attend PAEP on the agreed dates. PAEP was conducted by a trained nurse educator. In the post-intervention phase eight weeks after PAEP, the questionnaire set was mailed to the parents. Completed questionnaires were then returned to the researchers by self-addressed stamped envelopes.

Statistical Analysis

The data entry and analysis were done using IBM SPSS Statistics version 20. The data were analyzed by paired *t*-test.

Ethical Approval

The Research Ethics Committee (Human), Universiti Sains Malaysia approved the study protocol (reference number: USM/JEPeM/140381). Permission to translate and adapt MBSFC was obtained from the author (Nookong, 2005).

RESULTS

The socio-demographic information of the parents is presented in Table 1. Most parents were female (n = 63, 80.8%), Malay (n = 76, 97.4%) and coming from low income family (n = 56, 71.8). Over half of the family members were smokers (n = 40, 51.3%). Most of the parents (n = 56, 71.8%) also reported the history of asthma among the family members.

Table 1. Frequency distribution of parent's characteristics (n=78)

Parent's characteristics	n (%)
Gender	
Female	63 (80.8)
Male	15 (19.2)
Age (years)	39.7 (6.90) ^a
Ethnicity	
Malay	76(97.4)
India	1(1.3)
Chinese	1(1.3)
Education level	
Primary school	5 (6.4)
Secondary school	52 (66.7)
College / university	21 (26.9)
Monthly income	
Low income	56 (71.8)
Moderate income	11 (14.1)
High income	11 (14.1)
Family members who are smoker	
Yes	40 (51.3)
No	38 (48.7)
History of asthma	
Yes	56 (71.8)
No	22 (28.2)

^aMean (SD)

Table 2 shows the comparison of mean MBSFC-M scores of the parents at pre-intervention and eight weeks post PAEP. There was a statistically significant increase in the MBSFC-M scores from pre-intervention (Mean=53.16, SD=10.22) to post-intervention (Mean=62.33, SD =7.26), an increase by 9.16 score. This indicates the positive effect of PAEP on the caregiver management behaviour.

Table 2. Comparison of the mean scores of MBSFC-M pre and post PAEP (n = 65)

Variables	Mean (SD)		Mean diff (95% CI)	<i>t</i> -stat (df)	<i>P</i> -value ^a
	Pre	Post(2 months)			
MBSFC-M total score	53.16 (10.22)	62.33 (7.26)	9.16 (7.27, 11.06)	64	0.001

^apaired *t*-test

DISCUSSION

The improvement of the caregiver management behaviour as indicated by an increase in MBSFC-M score shows the positive effect of PAEP on the caregivers. There may be several reasons for this situation. The delivery of PAEP education interactively and the practical demonstrations on the inhaler techniques could be the reasons. Next, the conventional lecture was included as one of the delivery tools in the programme to promote a better understanding about asthma among the parents. Additionally, the brochures with attractive graphics and a suitable combination of colours were also used to ensure sustainability of the programme.

In comparison, Celano *et al.*, (2012) reported similar improvement in parental asthma management after participation in an asthma health education programme. Previous studies have shown that the use of short education programme for parents was able to improve their inhaler technique with a spacer (Aziz *et al.*, 2006). A combination of written and verbal instruction showed most of the patients was able to achieve the maximum score for inhaler technique with Turbuhaler (Vichyanond *et al.*, 1994).

The use of brochures as printed education materials is more efficient than spoken language as the reader can control the speed at which they read and understand the information (Redman *et al.*, 2007). Other than that, written education tools are economical which can strengthen verbal command and are the most preferred educational ways by clients (Rankin *et al.*, 2005). Mayer *et al.*, (2009) put forth that, it is better to have two or three brochures that are easy to understand, as compared to a brochure that covers everything but may cause an information overload. Based on this suggestion, PAEP utilized two brochures on the asthma action plan and the use of an inhaler.

According Clayton (2009) graphics can be used to narrow the language barriers, reducing the amount of text to read, stressing key information and providing step by step instruction. Graphics presented should be simple, realistic, and relevant with a focus on parents' actions. Pictorial usage in health education has been also shown to increase attention, comprehension, recall of what was explained and adherence to health standards with quick recall of the recommendations

(Houts *et al.*, 2006). Mayer and Villaire (2009) said that illustrations were used to support, improve, and clarify the written word.

Asthma education does not include asthma knowledge acquisition but the ability to sustain the knowledge gained, that can result in an effective everyday application of the acquired knowledge (Bryant-stephens & Li, 2004). Therefore, health information delivered must be accurate, relevant to the target population and based on current practice standards (Clayton, 2009). Overall, the information presented were based on what have been suggested by the asthma education plan including the meaning of asthma signs and symptoms of asthma attacks, trigger factors and identification of asthma, medications of the same, recognition of acute attacks and asthma action plan, and lastly demonstration on inhaler technique. Bryan Stephens and Li, (2004) stressed that, when the learners have obtained the knowledge, they can retain most of the knowledge acquired up to one-year post command.

The other education programmes are different from PAEP, which mainly focused in the clinic or outpatient setting. PAEP module is delivered by a nurse educator using similar dialect and level of understanding for the parents. The idea of health care promotion and education should be taught by a person who lives within the same society and has experienced the same environmental and social pressure (Bryant-Stephens & Li, 2004). PAEP also focuses on educating a small number of parents in each setup. This allows parents to give more attention to learning. Asthma education, particularly within a small group with an interactive format, had improved overall care for asthmatic children (Watson *et al.*, 2009).

According to our knowledge, this is the first reported study in Malaysia to assess parents' management behaviour at home for children with asthma. Correct asthma management behaviour is crucial for the family to live a normal life. Identified trigger factors for asthma attack should be informed and preventive measures and steps should be taken to avoid an acute attack. Knowledge without practice on the right management at home is deemed a failure for better livelihood. The effective of asthma control largely depends on families' attitude towards managing environmental factors and lifestyle (El-Sharif *et al.*, 2003).

There were a few identified limitations of the study. The study location was in the state of Kelantan, which has a generally homogenous population, mostly of Malay ethnicity. In comparison, Malaysia is a multiracial country, thus Kelantan may not be representative of Malaysia, consequently limiting the generalizability of this study findings. Next, this study also did not include a control group. This was because the primary goal of PAEP is to educate parents about asthma, thus the researchers considered the inclusion of control group to be unethical in the present study as it may marginalize the control group in term of knowledge and possible benefits of the programme. As such, the present study is limited in term of controlling for effects that might be expected over the period of eight weeks without intervention. Additionally, recruitment of the students seemed to be a problem due to reduced number of children in the school-aged group due to better control of symptoms prior to the recruitment process. Most of the children had three or six-month appointment. There was time frame difficulty for long-term assessment following completion of PAEP. This is to be

investigated but however, the availability of take-home brochure may be useful factors in influencing memory retention.

CONCLUSION

In the present study, PAEP showed a positive effect on the caregiver management behaviour among the parents of asthmatic children in Kelantan as indicated by the significant increase in MBSFC-M scores following the programme. Acknowledging the limitations of the study, more studies are required to learn the applicability of PAEP in other states in Malaysia. Future research may also focus on long-term assessment of PAEP for retention of the information, practice, and motivation to maintain a consistent asthma control at home.

PAEP has given some insight on changes required for the parental education trend. The nursing curriculum may need to focus on the importance of health education among parents in controlling asthma among the children. This allows parents to take an active role in the management of asthma.

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ABSTRACT

Nowadays, finding employment is as hard as finding a needle in a haystack. Moreover, many nursing graduates are noted to have work that is not related to their course in college. Graduate Tracer studies are essential for understanding the relevance and quality of programs offered by the universities as well as the labour market. The study determined the current work status and employment data of the graduates of the University of Cebu Lapulapu and Mandaue (UCLM) College of Nursing of all batches from 2007 to 2014. The findings served as a basis for a report on the employment data of UCnian nursing graduates. The data for this tracer study was gathered through the Graduate Tracer Tool (GTT) patterned from the Commission on Higher Education (CHED). In the data analysis, descriptive statistics was used. The employment data of the respondents showed the current work status of the nursing graduates. The majority of the respondents are employed. In their present occupation, most of the respondents assume professional work and the major line of business is in the health and social work sector. It was depicted that most of them are regular employees, have professional occupations and have local jobs in the health and social work field. Most are regular/permanently and are locally employed. More than a half got their jobs within 1 to 6 months and almost two-thirds of the respondents had jobs related to the course they took up in college. The competencies that the graduates find useful in their first job are communication skills, critical thinking skills and human relations skills.

Keywords : *Tracer study, nursing graduates, current work status, general information, educational background, employment data*

INTRODUCTION

Nowadays, finding employment is very tough for which many nursing graduates are noted to have work that is not related to their course in college. In the 2008 Employment Summit, Commission of Higher Education observed that higher education institutions were producing “graduates who do not match the labour demand” (Philippine Daily Inquirer, 2010).

A company, which must meet competition and maintain its leadership in the field, cannot leave the hiring and selection of its workers to chance. It needs people who can contribute to the company's business-people with ideas for new products, services or methods (Sison, 2005).

Only three out of ten college graduates (30%) looking for work may be able to find jobs if the government is unable to create sufficient jobs,

according to a non-government research agency. The figure provided by IBON also does not include graduates who do find jobs but will probably take whatever work is available even if it is not related to their college degrees. The government's labor department, however, said unemployment is caused not by the lack of jobs but by the perceived mismatch between skills possessed by applicants and the demands of employers (GMA News Online, 2010).

According to a press release from the Philippine Nurses Association last July 2008, many licensed nurses are now underemployed or unemployed as a result of changes of policy in destination countries, the current situation of oversupply, and quality problems among others (Philippine Nurses Association, 2008). Health authorities in Central Visayas are more concerned about the employment of nurses in Cebu rather than the absence of Cebu nursing students in the

top 10 of last year's board exams (Cebu Daily News, 2012).

Recent graduates or nurses who have not practiced after graduation may have a limited idea of job opportunities. Their choice of the first job may be strongly influenced by their education, achievement level, geographical preference, salary, mate's occupation and peer pressure. They are likely to take several jobs before settling down. The dissatisfied employees are often not actively seeking other employment but are likely to be receptive to new openings or job offers (Tomey, 2005).

It is the recent trend of the nursing graduates of the University of Cebu – Lapulapu and Mandaue (UC-LM) to opt for volunteer work while waiting for employment. With fewer nurses being hired both in private and government hospitals, some nurses end up in industries not related to their practice such as call centres or in academies with English as second language. For some hospitals, they require 78% board exam rating which makes most of the November 2009 passers ineligible to apply and other hospitals prefer to hire their own graduates.

According to Dr. Susana Madarieta, (Government agency in Manila, Philippines) the bigger concern lies in the employment of nurses since private, and government hospitals appear to be fully staffed. Nurses employed in private hospitals stand to earn P6, 000 to P7, 000 a month. If one nurse resigns, there is a list of nurses waiting to be hired. Government hospitals pay better salaries but on the Vicente Sotto Memorial Medical Center, at least 400 to 600 nurses are on the waiting list (Cebu Daily News, 2012). Nurses have left hospital nursing to work for managed care organizations, insurance companies, pharmaceutical firms, healthcare technology vendors, medical device vendors, consulting firms, and many others (Tomey, 2005).

The employability of graduates is now an essential concern as a competition for students, both local and overseas. The employment situation remains particularly challenging for all kinds of profession. As we leave the age of production and enter the age of knowledge, new careers are likely to develop; different skills will be needed, and certain industries will grow while others fade. New graduates are in a transition

phase in their careers. One of the important and challenging issues many students are facing today is the rapidly changing world of work. Trends in the labour market should be paid close attention (Commission on Higher Education, 2012).

As of July 2015, the employment rate estimated in the Philippines was at 93.5 percent while the unemployment rate was 6.5 percent. Among the unemployed persons in July 2015, 62.1 percent were males. Of the total unemployed, the age group 15 to 24 years comprised 50.4 percent, while the age group 25 to 34, 29.5 percent. By educational attainment, 22.2 percent of the unemployed were college graduates, 13.5 percent were college undergraduates, and 33.2 percent were high school graduates (Philippine Statistics Authority, 2015).

Graduate Tracer studies are essential as a way of understanding the relevance and quality of programs offered by the universities as well as the labor market. There is a demand for empirical evidence regarding the professional relevance of Higher Education Institutions (HEIs) study programs using graduate tracer studies. HEIs require graduate tracer studies for accreditation of study programs. HEIs must be interested in feedback from their graduates on the quality of education (Obando & Shisanya, 2013).

Given the above statements, the researcher wanted to find out the current work status of nursing graduates and their employment data, whether they were able to find jobs related to their course or in some other fields.

The study was anchored on Robert Lent, Steven Brown, and Hackett's Social Cognitive Career Theory (SCCT). Social cognitive career theory emphasizes on:

(1) Cognitive-Person variables that enable people to influence their career development; (2) extra-person variables that enhance or constrain personal agency.

SCCT, (Andersen & Vandehy, 2011) is divided into two complementary levels of theoretical analysis. (A) FIRST LEVEL-presented cognitive-person variables that enable people to exercise within their own career development; (B) SECOND LEVEL - considered the paths through which several additional sets of variables—such as (1) physical attributes; (2) features of the environment; (3)and particular learning experiences—influence career-related interests and

choice behavior.

Occupations are categorized by the interpersonal settings that people must function and their associated lifestyles. Another theory, John Holland's Theory of Vocational Personalities and Work Environments, was utilized.

Holland's study as emphasized by Cavanaugh and Blanchard-Fields in 2011 that identifies six personality types that combine these factors, RIASEC, wherein each letter or code stands for a particular "type": (1) Realistic (Doers), (2) Investigative (Thinkers), (3) Artistic (Creators), (4) Social (Helpers), (5) Enterprising (Persuaders), and (6) Conventional (Organizers).

Individuals are initially attracted to a career by their personalities and other variables such as age, gender, culture, social class, intelligence, and level of education that constitute their personal background.

Finally, the study makes use of Frank Parson's Trait and Factor Theory, which refers to the assessment of the characteristics of the person and a job. Individuals have unique traits that can be objectively measured and matched against requirements of occupations. Choosing an occupation involves trying to match an individual to a job so that their needs will be met and their job performance will be satisfactory (Zunker, 2011). The terms traits and factor "refer to the assessment of characteristics of the person and the job performance. Traits were originally viewed as being biologically based and therefore unchanging, and later as learned and subject to change. The term "trait and factor" implies a matching between individuals and jobs, and career selection occurs as a result of understanding the relationship between knowledge about the occupation (Patton & McHamon, 2014).

The study determined the current work status and the employment data of the University of Cebu Lapu-Lapu and Mandaue (UCLM) College of Nursing graduates from all batches of 2007 to 2014 with the following objectives:

- A. To check employment and unemployment situation of graduates;
- B. To determine whether the graduates' specific work assignment are related to their study
- C. Viewing whether competencies learned in college

was useful in the employment

METHODOLOGY

The study utilized the descriptive research design to determine the employment status of the nursing graduates of University of Cebu Lapu-Lapu and Mandaue from 2007 to 2014. The findings were used as the basis for a report. The respondents of the study were nursing graduates of University of Cebu-Lapulapu and Mandaue batch 2007–2014. The number of respondents per batch is as follows: (A) 10 from Batch 2007, (B) 3 from Batch 2008, (C) 11 from Batch 2009, (D) 12 from Batch 2010, (E) 28 from Batch 2011, (F) 29 from Batch 2012, (G) 30 from Batch 2013, (H) 27 from Batch 2013. The total number of respondents equaled to $n=150$.

The researchers utilized the University of Cebu Lapulapu and Mandaue Graduate Tracer Study Tool. Part one is about general information. Part two is regarding the respondent's educational background. Part three is concerned about the training(s) and advanced studies they have attended after college. Finally, part four is about their employment data. These components were used to determine the graduate's current status.

The researchers asked permission first from the dean's office to conduct the study. Next, they requested from the Registrar's Office the lists of names, addresses, and contact numbers of the graduates. The administration of the questionnaire was done in three manners, namely: (1) the alumna was suggested to visit the college and answer the questionnaire, (2) the questionnaire was distributed through electronic mail and social media e.g. Facebook and Twitter and (3) Google forms were used to distribute the questionnaires directly via the internet. Simple Percentage was used to analyze and present the information coming from the respondents.

Some limitations of the study include: (1) Only a few graduates were accessible ; (2) Time Constraints; (3) Graduates answer the tool with a hurried pace, which makes some data unreliable; (4) The questionnaire is of a lengthy nature and the arrangement is confusing and (5) Lack of responsiveness in some subjects, leading to fewer number of respondents in some batches. In the data analysis, descriptive statistics was used. In the future

studies, the researchers must utilize an improved program tracer instrument, due to the improper design and poor grouping of constructs of the prior instrument.

RESULTS AND DISCUSSION

As shown in Table 1, most of the respondents were females and the majority of the respondents were single.

According to an article entitled Single People, singles do more to maintain a diversity of interpersonal ties than married people do (De Paulo, Bella., 2011). Meanwhile, from Wharton's view, gender operates at all levels of social life which is deeply embedded in how work is organized, rewarded, and experienced. A more recent stream of literature in the gender and work area views gender as embedded within work structures and organizations (Wharton, 2013).

Table 1. Profile of the Graduates (n=150)

CIVIL STATUS	FREQUENCY	%
Single	141	94%
Married	8	5.33%
Consensual Union	1	0.67%
GENDER	FREQUENCY	%
Male	65	43.33%
Female	85	56.67%

Table 2 shows that the top reasons for taking the course or pursuing a degree are the following: influence by parents or relatives, an opportunity for employment abroad, the prospect for immediate employment. Furthermore, Table 2.1 presented the reason for pursuing advanced studies, 146 of 150 respondents answered that it is mainly for professional development. The advanced studies/pieces of training attended include BLS/ACLS and IV training, while only a few took up masters studies.

According to the findings of the study entitled, "Friendship Quality and Peer Attachment as Predictors of Adolescents' Subsequent Academic", friendship quality and peer attachment in early adolescence are predictive of relative changes in levels of academic

achievement over time (Spavins, 2010). Moreover as stated in another study, registered nurses reported transformative experiences when returning for their baccalaureate degree in nursing which included raising their potentials, changing their perspectives about nursing practice, and being able to finally “see the big picture.” Although RNs felt they returned to school as skilled, knowledgeable and professional practitioners, they reported growing beyond their expectations in areas of knowledge and professionalism, which they felt led them to become more effective to bring about change and a better patient advocates (Orsolini-Hain, 2010).

Table 2. Reasons for taking the course or pursuing degree (n=150)

Reasons for taking the course or pursuing degree		
	FREQUENCY	%
High grades in the course or subject related to the course	6	4%
Good grades in high school	10	6.67%
Influence by parents or relatives	20	13.33%
Peer influence	10	6.67%
Inspired by a role model	11	7.33%
Strong passion for the profession	11	7.33%
Prospect for immediate employment	12	8%
Status or prestige of the profession	7	4.67%
Availability of course offering in chosen institution	11	7.33%
Prospect of career advancement	11	7.33%
Affordable for the family	7	4.67%
Prospect of attractive compensation	12	8%
Opportunity for employment abroad	18	12%
No particular choice or no better idea	4	2.67%

Table 2.1. Training(s) Advance Studies Attended After College (N=146)

Advanced Studies Attended	Frequency	%
BLS/ ACLS	86	58.90%
IV Training	54	36.99%
Masters	6	4.12%
What made you pursue advance studies?	Frequency	%
For promotion	49	33.56%
For professional development	97	66.44%

Table 3 presents the employment data of the graduates. The majority of the respondents were employed and less than one fifth is not presently employed. In lieu with these findings, Table 3.1, shows the reasons why they are not yet employed (n=28) which are: family concerns, a decision not to search for a job or pursuing for advance or future studies.

In Philippines, the First Global Summit of Filipino Nurses happened on January 15, 2014. Sec. Enrique T. Ona mentioned in his speech that the employment data from Philippine Overseas Employment Administration (POEA) reveals that out of the 526,897 registered nurses nation wide in 2012, 177, 414 nurses are employed abroad. Meanwhile, in the same year, the National Database of Human Resources for Health Information System reports that there are only 38,488 nurses employed in the country's government and private hospitals (DOH, 2014). At the latest count, there are more than 200,000 nurses in the country who are out of a job. Another 100,000 got employment not related to their profession. They either land as casino workers, waitresses in restaurants and hotels or call center agents (Sangil, 2014).

Table 3. Employment Data of the Graduates (n=150)

EMPLOYMENT DATA		
Are you presently employed?	FREQUENCY	%
Yes	121	80.67%
No	28	18.67%
Never employed	1	0.67%

Table 3.1. Reasons why you are not yet employed (n=28)

Please state reasons why you are not yet employed.	FREQUENCY	%
Advance or future studies	10	35.71%
Family concern and decided not to find a job	13	46.43%
Lack of work experience	1	3.57%
Did not look for a job	4	14.29%

Table 4 reveals the status of the employed graduates (n=121), in addition, it involves the present occupation, the major line of business, present employment status and place of work. In their present occupation, most of the respondents assume professional work and the major line of business is in the health and social work sector. Most of the respondents are regular/ permanently employed, a little less than a fifth are contractually and temporarily employed. Majority of the respondents are locally employed.

It is to be emphasized that nursing graduates are concerned about the fact that not getting experience will impact future employability. Some went so far so as to express willingness to “work for free” to gain needed experience. The new graduates also are worried that without work experience, they are going to lose the skills they have developed in nursing school or that those skills will be quickly outdated. Comments related to the high cost of baccalaureate education arise as the graduate is faced with not being able to find a job (Lippincott's Nursing Center, 2012).

With regards to employment status, in the Philippines, according to Alvin Ng, an economist at the University of Santo Tomas, labor mismatch impacts the economy in such a way that the time spent pursuing a particular course in college becomes a futile exercise for the student and brings about an oversupply of talents to a certain profession. A mismatch occurs because of the failure to generate the sufficient number of people needed by the economy.

Table 4. Status of the Employed Graduates (Present Occupation, Major Line of Business, Place of Work) (n=121)

Present Occupation (based on the Philippine Standard Occupational Classification)	FREQUENCY	%
Professional	96	79.34
Service Worker	11	9.1
Clerk	7	5.79
Officials of Government and Special-interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors	5	4.13
Technician and Associate Professionals	1	.83
Clerks	1	.83

Major line of business	FREQUENCY	%
Health and Social Work	81	66.94
Transport Storage& Communication	14	11.57
Education	12	9.92
Manufacturing	6	4.96
Hotels and Restaurants	1	.83
Transport storage and communication	2	1.65
Public administration and defense; compulsory and security	3	2.48
Private households with employed persons	1	.83
Extra-territorial organizations and bodies	1	.83
Present employment status	FREQUENCY	%
Regular or permanent	77	63.63
Temporary	18	14.88
Contractual	23	19
Self-employed	3	2.48
Place of Work	Frequency	%
Local	111	91.89
Abroad	10	8.11

Table 4.1: Gross monthly earning in first job after college

What is your initial gross monthly earning in your first job after college?	FREQUENCY	%
	N=121	
Below P5,000.00	2	1.65
P5,000.00 to less than P10,000.00	98	80.99
P10,000.00 to less than P15,000.00	15	12.4
P15,000.00 to less than P20,000.00	3	2.48
P20,000.00 to less than P25,000.00	3	2.48
Relevance of job to the course taken in college	FREQUENCY	%
Relevant	87	71.9
Not Relevant	34	28.1

This part tackles on finding the first job of the respondents (n=121). Most of the respondents still had their first job after college, and the reason for staying in their first job is because of salaries and benefits. The initial gross monthly earning on the first job after college is Php 5,000 to less than Php 10,000. Almost two-thirds of the respondents had jobs related to the course they took up in college.

The competencies that the graduates find useful in their first job are as follows (Table 5): communication skills (35.35%) considered the most important,

followed by critical thinking skills with less than a third (27.59%). Human relations skills are last with just over a tenth of a hundred (16.81%).

Table 5: Competencies learned in college that is useful in the first job (multiple responses)

What competencies learned in college did you find useful in your first job?	FREQUENCY	%
Communication skills	82	35.34
Human relations skills	39	16.81
Entrepreneurship skills	8	3.45
Information technology skills	12	5.17
Problem-solving skills	27	11.64
Critical thinking skills	64	27.59

CONCLUSION

The employment data of the respondents showed the current work status of the nursing graduates. The majority are employed. In their present occupation, most of the respondents assume professional work and the major line of business is in the health and social work sector. It was depicted that most of them are regular employees, have professional occupations and have local jobs in the health and social work field. Most of the respondents are regular/ permanently employed, only less than a fifth is contractually and temporarily employed accordingly. Most of the respondents are locally employed. For most of them, more than a half got their jobs within 1 to 6 months of graduation. Almost two-thirds of the respondents had jobs related to the course they took up in college. The competencies that the graduates find useful in their first job are communication skills, critical thinking skills and human relations skills.

The researchers recommend the following: the alumni office and placement office of UCLM should conduct campus job fairs and post hiring announcements on health care field through bulletin boards and websites; future studies should be done to gather information about the status of the graduates every three years; the guidance services must provide the graduates with career opportunities orientation, aside from the health sector so that they can be employed into another line of business. In line with this, Alumni Committees must be appointed by the college. They shall be responsible for keeping track of the status of the graduates; and, lastly, the College of Nursing should further develop programs on improving and enhancing student's communication skills, human relations skill, and critical thinking skills.

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VALIDATION OF THE OCCUPATIONAL FATIGUE EXHAUSTION RECOVERY (OFER) SCALE AMONG EMERGENCY NURSES IN A BRUNEI PUBLIC HOSPITAL

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ABSTRACT

Introduction: The Occupational Fatigue Exhaustion Recovery (OFER) scale is a reliable and validated tool to measure work-related fatigue. However, its psychometric properties were not found in any studies examining nurses in the Southeast Asian region, particularly in Brunei.

Aim: To ensure validity and reliability of the OFER scale using a sample of emergency nurses in Brunei.

Methods: OFER scale was assessed for face, reliability statistics including Cronbach's Alpha and Corrected Item-Total correlation, along with convergent and discriminant validity. Floor and ceiling effects were also calculated.

Results: Thirty-eight emergency nurses participated in the study. OFER scale demonstrated high face validity. Internal consistency reliability was good where Cronbach's Alpha ranged from 0.72 to 0.80. A ceiling effect was present for Item 6, 7, and 8 of the acute fatigue subscale. Floor effect was present for Item 15 of inter-shift recovery subscale. Item 13 might have slightly lower inter-item correlation amongst the items in the inter-shift recovery subscale. The inter-scale correlation might be 'too high' between acute fatigue scale and chronic fatigue subscale.

Conclusion: Overall, there were good reliability and validity estimates for OFER scale using the sample of emergency nurses from Brunei.

Keywords : *Fatigue; Surveys and Questionnaire; Reliability and Validity; Emergency nursing.*

INTRODUCTION

The Canadian Nurses Association (2010) defined nurse fatigue as nurses' subjective feeling of acute physical and mental tiredness or exhaustion that creates an unrelenting overall condition; interfering with their physical and cognitive ability to function at their normal capacity.

Work-related fatigue amongst nurses has been recognized as a source of adverse impacts on the quality of care, client satisfaction, and patient and nurse safety (Martin, 2015, Witkoski and Dickson, 2010). Extended working hours and short recovery period in nursing may cause cognitive, psychomotor, and behavioural impairment that leads to slow reaction time, lapse in critical judgement, and reduced

motivation, and thus increase in work errors (Witkoski and Dickson, 2010). A recent report stated that medical errors are the third leading cause of death in the United States, following heart disease and cancer (Makary and Daniel, 2016).

The Occupational Fatigue Exhaustion Recovery (OFER) scale is a reliable and validated tool to measure work-related fatigue (Winwood *et al.*, 2005). However, its psychometric properties were not found in any studies among nurses in Brunei or the Southeast Asian region. Thus, this brief validation was conducted to assess validity and reliability of OFER using a sample of emergency nurses before administering it to examine exposure of work-related fatigue among emergency nurses in Brunei.

METHODS

The joint Ethics Committee of Institute of Health Sciences, Universiti Brunei Darussalam and the Ministry of Health of Brunei have approved this study. Participants ($n=43$) comprised of emergency nurses working in one of the main public hospitals in Brunei Darussalam. Convenient sampling technique was used for participant selection. To prevent coercion and protect the integrity of the study, the unit nurse manager administered the questionnaire only to voluntary participants. All participants received a structured questionnaire, which they were given seven days to complete and return to the nurse manager. Participation was voluntary and respondents were provided with an envelope to seal their questionnaire immediately after completion. Participants' basic personal background (such as age, marital status), employment background (such as qualification, the number of years of working as a nurse), and health background (such as body mass index, smoking) was enquired. Body mass index was classified according to World Health Organization expert consultation (Barba *et al.*, 2004). About a month later, 40 respondents returned the questionnaire (93.0% response). Two questionnaires were partially completed and were omitted. A total of 38 questionnaires was used for analysis.

Work-related fatigue was measured using the 'shift workers' trait scale version of the Occupational Fatigue Exhaustion Recovery scale (OFER), developed by Winwood *et al.*, (2005). The OFER scale was used due to previous studies demonstrating good discriminant validity between acute and chronic fatigue, and the measure of recovery between shifts, i.e., inter-shift recovery, which is an important aspect for shift workers. The scale also offers calculation for persistent fatigue. It comprised of 15 items, measuring three subscales, i.e., chronic fatigue, acute fatigue, and inter-shift recovery (and/or persistent fatigue). Seven response categories were used for each item from 0 (Strongly disagree) to 6 (Strongly agree).

ANALYSIS

Comprehensibility or face validity of the scale was assessed by comments and suggestions from the participants.

All statistical analyses were performed using SPSS, version 21. Descriptive statistics for demographic

characteristics were analyzed for prevalence on categorical variables. For continuous variables, distribution of histogram was positively skewed thus median and the interquartile range was used instead of mean and standard deviation.

On the OFER scale, chronic fatigue was calculated as a percentage sum, according to the OFER manual. Score distribution was categorized by quartile into low, low/moderate, moderate/high, and high exhaustion. High score of acute and chronic fatigue and low inter-shift recover indicates 'early warning sign' that the current workplace is incompatible and unsustainable for the nurses' continued health and wellbeing.

Internal consistency reliability was determined using Cronbach's Alpha. The inter-item correlation was analyzed using Corrected Item-Total Correlation (CITC). Floor and ceiling effect, i.e., the proportion of participant's response to the lowest (floor) and highest (ceiling) options for all the instruments was also calculated in order to evaluate the adequate variability of the sample in the study. Discriminant and convergent validity were analyzed by bivariate correlations using Spearman's correlation matrix instead of higher level analysis such as factor analysis due to insufficient sample size (Hertzog, 2008). The correlation coefficient of above 0.70 between two scales is normally considered 'too high' (Nunnally and Bernstein, 1994). All statistical tests were two-sided and a P value less than 0.05 was considered statistically significant.

RESULTS

Table 1. Demographic characteristics of participants

	N	(%)	Median	(IQR) ^a
Age (Years)			30.5	(8.0)
Gender				
Male	18	(47.4)		
Female	20	(52.6)		
Marital status				
Married	25	(65.8)		
Single	13	(34.2)		
Number of children at home				
0	21	(55.3)		
1	9	(23.7)		

2	3	(7.9)		
≥ 3	5	(13.1)		
Nationality				
Brunei	32	(84.2)		
Philippines	6	(15.8)		
Race/Ethnicity				
Malay	29	(76.3)		
Filipino	6	(15.8)		
Chinese	2	(5.3)		
Murut	1	(2.6)		
Highest qualification				
Bachelor degree	7	(18.4)		
Advanced diploma	9	(23.7)		
Diploma	21	(55.3)		
Certificate	1	(2.6)		
Years working as nurse			8.5	(8.0)
Years working in this Emergency department			7.0	(10.0)
Designation				
Nurse Officer	1	(2.6)		
Staff Nurse	34	(89.5)		
Assistant Nurse	3	(7.9)		
Body Mass Index (BMI)				
Normal (18.5-24.9)	9	(23.7)		
Overweight (25-29.9)	14	(36.8)		
Obese class I (30-34.9)	9	(23.7)		
Obese class II (35-39.9)	2	(5.3)		
Obese class III (≥ 40)	3	(7.9)		
Smoking				
Yes	6	(15.8)		
No	32	(84.2)		
IQR=Interquartile range, SD=Standard deviation, ^a Distribution positively skewed				

Table 1 depicts the demographic characteristics of the participants. In brief, the gender of the study sample was almost equally represented. They were mostly local (84.2%), married (65.8%), and worked as staff nurses (89.5%) who had worked in the emergency department for a median of 7 years (IQR=10.0). More than half of them (55.3%) have the nursing qualification at diploma level. Participants mostly abstained from smoking (84.2%) but only 23.7% of their BMI were at a normal range, most of them were overweight (36.8%) or in the obese category (36.9%).

Table 2 shows the mean scores, floor and ceiling effects, and minimum score and scales of the OFER scale. The mean scores for fatigue scales showed that nurses experienced moderate/high-level exhaustion. The acute fatigue score was higher than chronic fatigue. On this note, ceiling effects were also present in the acute fatigue scale and were absent in chronic fatigue scale. Meanwhile, the mean score for inter-shift recovery indicated that nurses experienced low/moderate recovery between shifts. Floor effect was present in item 15 on inter-shift recovery scale.

Table 2. Mean score, floor & ceiling effects, and Cronbach's alpha of Occupational Fatigue Exhaustion Recovery scale

	Score		% Floor	% Ceiling	Score Min/Max	Scale Min/Max
	Mean	(SD)				
Chronic fatigue scale	3.9	(0.9)				
Item 1	3.5	(1.2)	0.0	0.0	1/5	0/6
Item 2	3.8	(1.4)	2.6	10.5	0/6	0/6
Item 3	3.9	(1.3)	2.6	5.3	0/6	0/6
Item 4	4.0	(1.3)	2.6	10.5	0/6	0/6
Item 5	4.2	(1.1)	0.0	10.5	2/6	0/6
Acute fatigue scale	4.2	(0.7)				
Item 6	4.3	(1.3)	2.6	21.1	0/6	0/6
Item 7	4.6	(1.0)	0.0	23.7	3/6	0/6
Item 8	4.3	(1.2)	0.0	18.4	1/6	0/6
Item 9	3.7	(0.9)	0.0	2.6	2/6	0/6
Item 10	4.0	(0.8)	0.0	2.6	3/6	0/6
Intershift recovery scale	1.9	(0.5)				
Item 11	1.7	(0.9)	10.5	0.0	0/3	0/6
Item 12	2.1	(0.6)	2.6	0.0	0/3	0/6
Item 13	2.1	(0.6)	0.0	0.0	1/3	0/6
Item 14	2.0	(0.7)	2.6	0.0	0/3	0/6
Item 15	1.7	(1.0)	15.8	0.0	0/3	0/6
SD=Standard deviation						

Table 3. Corrected Item-Total Correlation and Cronbach's Alpha for Occupational Fatigue Exhaustion Recovery scale

	CITC ¹	Apha ²
Chronic fatigue scale		0.80
Item 1	0.45	
Item 2	0.61	
Item 3	0.68	
Item 4	0.59	
Item 5	0.58	
Acute fatigue scale		0.72
Item 6	0.56	
Item 7	0.68	
Item 8	0.56	
Item 9	0.51	
Item 10	0.15	
Intershift recovery scale		0.73
Item 11	0.54	
Item 12	0.53	
Item 13	0.34	
Item 14	0.59	
Item 15	0.53	

¹Corrected Item-Total Correlation, ²Cronbach's Alpha

Table 3 presents reliability statistics for internal consistency reliability and inter-item correlation interpreted using Cronbach's Alpha and CITC respectively. The OFER scale demonstrated good internal consistency reliability where Cronbach's Alpha ranged from 0.72 to 0.80. All inter-item correlation was good (where $r > 0.40$) by the standard interpretation indicating good convergent validity except for Item 13 where CITC was only 'adequate' ($r=0.34$). None of the items have too high CITC ($r > 0.70$).

Table 4. Correlations between the scales in Occupational Fatigue Exhaustion Recovery scale

Scale	Spearman Correlation Coefficients		
	1	2	3
Chronic fatigue scale	1		
Acute fatigue scale	0.72**	1	
Intershift recovery scale	-0.45**	-0.43**	1

** $P < 0.01$ (2-tailed)

Table 4 showed that there were good inter-scale correlations between the OFER scales. Intershift recovery showed good discriminant validity against a chronic fatigue scale ($r=-0.45$) and acute fatigue scale ($r=-0.43$). However, the chronic fatigue scale and acute fatigue scale might have 'too high' correlations ($r=0.72$).

DISCUSSION

The distribution of the study sample reflected that staff nurses' demographics at the hospital were mostly overweight or obese. This is an important indication for the ensuing large survey because work-related fatigue has shown to associate with weight gain and subsequent health problems (Lallukka *et al.*, 2005).

The OFER scale has demonstrated high comprehensibility or face validity where participants understood the questions very well and agreed that work-related fatigue was an important aspect of their daily work life.

OFER's chronic fatigue scale, acute fatigue scale, and intershift recovery scale showed good internal consistency reliability where Cronbach's Alphas were 0.80, 0.72, and 0.73 respectively. These values were comparable to those found in the original validation study where Cronbach's Alphas were 0.93, 0.82, and 0.75 respectively (Winwood *et al.*, 2005). Similar to the results reported in the original validation study, this study also showed that there was good discrimination between intershift recovery scale and the fatigue scales where intershift recovery and chronic fatigue ($r=-0.45$) has higher negative correlation than with acute fatigue ($r=-0.43$) (Winwood *et al.*, 2005).

Floor and ceiling effects were present in Item 2, 3, 4 of the chronic fatigue scale, and Item 6 in acute fatigue scale. Only ceiling effects were present in Item 5 of the chronic fatigue scale. Only floor effects were present in Item 11, 12, 14, and 15 of intershift recovery scale. No floor and ceiling effects were present for Item 1 and 13. Overall, it still indicated the adequate variability of the sample, which is required for a good validation study (Streiner *et al.*, 2014).

The inter-item correlation was moderate in all items within each of the respective scales indicating good convergent validity except for Item 13 of intershift recovery scale where the inter-item correlation was only adequate. In terms of interscale correlation, it may appear that chronic fatigue and acute

fatigue might have ‘too high’ correlations ($r > 0.70$). However, the OFER scale has been previously tested and validated among a large number of nurses. Hence, we postulated that the convergent validity issue of Item 13 in the intershift recovery scale and the discriminant validity issue between the fatigue scales were not as good in comparison with original scale development, probably due to the limitation of this study with the very small sample size, which may also limit generalizability of the findings (Nunnally and Bernstein, 1994; Winwood *et al.*, 2006).

CONCLUSION

Overall, there were good reliability and validity estimates for OFER scale using this sample of nurses. Internal consistency reliability was good. A ceiling effect was present for Item 6, 7, and 8 of an acute fatigue scale. Floor effect was present for Item 15 of inter-shift recovery scale. Only two validation issues

were identified. Item 13 might have slightly lower inter-item correlation amongst the items in the inter-shift recovery scale. The inter-scale correlation might be ‘too high’ between acute fatigue scale and chronic fatigue scale. These items and scales were retained since the sample size was small and may limit the generalizability of findings.

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ABSTRACT

The profession of Nursing has taken a huge leap forward both during the time of Florence Nightingale to today's modern age. This article sheds light on the journey of nursing, from its humble roots to Nightingale's contributions and the various breakthroughs of the present along with a focus on the pros and cons as well as the strengths and weaknesses of Nursing in both Nightingale's and today's time. Various aspects in both time periods are considered in this article along with a note that emphasizes on the contemplation rather than outperformance in the field of Nursing in both time periods.

Keywords : *Nightingale's contributions, Nightingale Training School for Nurses, Crimean Fever, Hospital-acquired infections.*

In the point of view of many, nursing is just another profession among countless others. To them, a nurse is not as noble as a doctor, nor is it as humble as a housemaid. Still, to deny the significance of nursing as a profession would be denying one of the fundamental aspects of human life - caring for the sick. Albeit the profession was created rather recently, the act of caring for the sick is as old as the very first person who bought a cup of water or a piece of warm cloth for someone who is ill. This is long before the profession even existed. The practice gradually evolved through the passage of time, from primitive caregivers, such as members of the Zuni tribe of Native America where an infant was born with a part of the placenta covering the face was destined to be a caregiver. Then we know of the Christian nuns and monks who devoted their lives for the care of the sick. They opened some of the earliest hospitals, such as the Hotel-Dieu in Paris which was founded by the city's bishop in 651 A.D. (Karen, 2009). Yet, there are no standard principles or regulations to define the practice. That is until Florence Nightingale came along.

Nightingale brought with her a series of dynamic changes and improvements that still influence the field of nursing today. She did something that was unprecedented by opening the first modern school of nursing, the Nightingale Training School for Nurses within St. Thomas' Hospital in 1860, which essentially laid the foundations of modern nursing as a distinct

discipline. For the first time in history, nursing was a profession in its own right. In the Crimean War, at the Selimiye Barracks in Scutari (modern-day Üsküdar in Istanbul), Nightingale herself spent every waking minute caring for the soldiers. In the evenings she moved through the dark hallways carrying a lamp while making her rounds, ministering to patient after patient. The soldiers, who were both moved and comforted by her endless supply of compassion, took to calling her "the Lady with the Lamp." Others simply called her "the Angel of the Crimea". Stephen Paget in the *Dictionary of National Biography* asserted that Nightingale reduced the death rate from 42% to 2%, either by making improvements in hygiene herself or by calling for the Sanitary Commission (Florence Nightingale 2015). Based on her observations in the Crimea, Nightingale wrote *Notes on Matters Affecting the Health, Efficiency and Hospital Administration of the British Army*, an 830-page report analyzing her experience and proposing reforms for other military hospitals operating under poor conditions. The book would spark a total restructuring of the War Office's administrative department, including the establishment of a Royal Commission for the Health of the Army in 1857 (Biography, 2015).

During Nightingale's time, nursing was a noble and spiritual profession, a trait inherited from the nuns and was further bolstered by her own actions in Crimea. Eager to follow her example, even women from the

wealthy upper classes started enrolling at the training school (Biography 2015). Most people who chose this profession did so out of a strong sense of passion, love, and compassion for the sick and the desire to provide them with care and comfort, once again mirroring the nuns and Nightingale herself. The matter of income and comfortability did not mean that much to them, and the work environment is still deplorable despite having improved by leaps and bounds through Nightingale's efforts. The situation has improved in the case of sanitation, such as the threat of acquiring nosocomial infections, otherwise known as hospital-acquired infections still being much greater than today, something that even the great Nightingale could not escape from, as she contracted Crimean Fever while serving in Scutari (Biography 2015). As repugnant as these conditions may seem to today's nurses, they pale in comparison with the intense passion and interest that were shared among most of the nurses during Florence Nightingale's days. At that time, Nightingale's "Notes On Nursing" was the guideline for the practice of nursing and her qualities as an administrator, spiritualist, politician, statistician, environmentalist, intellectual and above all a hands-on caregiver were an inspiration to all who followed in her footsteps to become a professional nurse.

In the modern age, nursing has evolved far from its roots of compassion and spirituality. Aside from being the branch of healthcare with the largest number of personnel, nursing has also been "modernized". Nurses nowadays are trained with an emphasis to be independent, competent, resourceful and efficient in their profession, even more so than the nurses in Nightingale's days. While this isn't a bad thing entirely, the qualities of love, compassion, care, and dedication, that so strongly represent the profession are largely left out or overlooked by most of the nurses today. Along with this, in today's time, there are increasing number of hospitals that fall under the influence of business-oriented corporations, whereby most of them turn away from treating healthcare as a form of service to the community and emphasize on profitability. As a result, the underprivileged are increasingly being denied from seeking and obtaining the quality healthcare that everyone deserves, something that Nightingale would surely frown upon.

In stark contrast with the of Nightingale's time,

most nurses today are chiefly drawn to the amount of pay rather than passion, especially in the European countries where the pay is substantially higher. Although it is undeniably true that today's nursing has gone a long way ahead in terms of knowledge and expertise, with the development of numerous nursing theories from nurse scholars such as Martha Rogers, Hildegard Peplau, and Dorothy Orem. Prior to them the frameworks for research were often "borrowed" from other disciplines (Karen 2009, p. 22), along with a truly diverse scope of choices, such as registered nurses to community health nurses and nurse practitioners who could perform primary care functions that were traditionally performed by physicians. Nurses perform all these duties at a lower cost but most of them lacked the zeal that was prevalent among the nurses of Nightingale's time.

Modern nursing through the perspective of Florence Nightingale, or rather if she is a patient on a contemporary ward, she might be embarrassed by the proximity of the other patients in the four-bed bay. This present system lacks privacy as the Nightingale wards, as she would be unable to monitor the whereabouts of the nurses from her bed, especially the ward sister, who doesn't seem to do a round of the patients. She would be having difficulty to know who was responsible for what among the nurses and horrified at having to ask for a bedpan, rather than being offered one. As well as bemused that student nurses receive half their 'education' at the local university, and that ward cleaning is 'contracted out' and beyond the ward sister's control (In Nightingale's time the ward maid came to be a highly valued member of the ward teams). Most of all, she would be distressed by the noise, the chatter and the bustle throughout the day, and sometimes at night (Stockwell, 2010).

Ironically, even though Nightingale strived to model the practice of nursing into a noble and dignified profession that is well balanced in professionalism and compassion, she also unwittingly bequeathed a legacy whereby most people from developing countries consider nursing to be a lowly occupation that is synonymous with only cleaning a patient's wounds, bodily fluids and excrements which along with the nurse's uniform. During her time nurses were treated as hospital-maids in white or sometimes pink dresses and caps as well as being considered to be subordinate and

were overshadowed by doctors. Moreover, Nightingale herself saw that nursing could offer women a meaningful life, which would provide them with a channel for their Christian virtues, their motherly nature and their natural intellect (Stockwell, 2010). p.5. This has led to the gender stereotype of nursing as a profession that is exclusive for women only and which still haunts the profession to this day, to an extent that it slowed its progress and development.

All in all, the nursing profession of today has both taken a step forward as well as a step backward, the same can also be said during Nightingale's time. Back then the nurses were deeply passionate and willing to

care for the sick, but shortages in comprehending the anatomy and physiology of the human body and advancements in medical technology limited their capabilities. Meanwhile, despite having a significant amount of expertise and understanding, most nurses today lack the profound sense of love and compassion of their predecessors. In a sense, nursing in both time periods definitively lacked something that the other profession possessed. Fair to say, possessing a firm grasp on the practices of nursing is imperative, but so is having a heart and soul that are never too full to listen and provide care to the tragedies, difficulties, discomforts and sufferings of others.

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