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Cognitions, Food Preferences and Breakfast Practices among Clinical Nursing Students

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Abstract

Clinical nursing students have early morning duties that might affect their breakfast practices, hence this study was conducted. The main purpose of this study was to determine the relationship of cognition in terms of knowledge, locus of control, and self-efficacy and food preferences in terms of health, sensory quality, convenience, cost, and familiarity to breakfast practices of the clinical nursing students. Purposive sampling was utilized to recruit 121 clinical nursing students. Descriptive and inferential statistics were used to treat the data. Results revealed a low knowledge, high self- efficacy in terms of cognition. As to the locus of control, respondents reported a strong internal locus of control, weak external locus of control. Overall, respondents have good breakfast practices. Analyses showed a negative significant relationship between external locus of control and breakfast practices, a negative significant relationship between food preferences and familiarity. No differences were found in the breakfast practices of the respondents considering their sex, year level, meal arrangement, and food allowance. Food preferences in terms of familiarity and health, cognition in terms of external locus of control and meal arrangement are the significant predictors of breakfast practices contributing 23.5% of the total variability of their breakfast practices. Results only established correlations between the cognitions in terms of external locus of control, and food preferences in terms of sensory quality, convenience, and familiarity and breakfast practices but not causal links. Further study is recommended to identify other determinants of breakfast practices and causality.

Keywords: *breakfast, cognitions, food preferences, nursing students, practices*

The nursing profession is inevitably associated with promoting a healthy lifestyle as they support patients to recover from their sicknesses by practicing health-promoting habits, hence, improving patient's health. Moreover, patients also take them as their role model in improving their health as they spend a lot of time in patient healthcare (Blandón et al., 2017). Amidst these, studies (Evagelou et al., 2014; Blandón, Molina et al., 2017; Konwea et al., 2016) have found that nursing students have unhealthy habits that may affect their image as health advocates.

Among these important health behaviors, fast food consumption and breakfast practices are given much attention. Evagelou et al. (2014) stated that 47.6% of nursing students eats in fast food chains one to two times a week. On the other hand, researchers globally have found that there is a high prevalence of breakfast skipping among young adults, as compared to other age groups especially in the United States (Hopkins et al., 2017). Correspondingly, Gwin and Leidy (2018) stated that the habit of neglecting and skipping breakfast is common in the United States; 60% of young adults frequently skips breakfast.

In the Philippines, 70% of Filipino college students had poor dietary habits (Acampado & Valenzuela, 2018). Due to the prevalence of breakfast skipping among college students, it is noteworthy that they are at risk for making poor dietary choices that may lead to significant health problems. In particular, clinical nursing students are an interest age group for adopting healthy eating practices as their profession is frequently correlated with promoting a healthy lifestyle (Blandón et al., 2017). Investigation on

the breakfast practices of clinical nursing students is essential while they are still in their clinical years as this serve as a major barrier in becoming an efficient health advocate and could influence them until they become professional health care providers (Konwea et al., 2016; Reed, 2014). Cognitions such as knowledge, locus of control (LOC), and self-efficacy could influence the breakfast practices of the clinical nursing students. On the other hand, breakfast practices reflect their acquired knowledge during their clinical years, as it can also affect their performance in providing adequate nutrition education and care to different patients (Alakaam et al., 2015). Researchers also suggest that it is important to determine the health-related self-efficacy and LOC of the clinical nursing students as studies have found that health behaviors are influenced by these two correlated concepts (Ahmed & El Badawy, 2016; Hosseini et al., 2015; Zielińska-Więczkowska, 2016). Food preference can be influenced by different factors that surround the students. It can also point a consumers' option of liking one product and disliking the other. In general, people perceive the basic taste, but what foods they end up liking is a result of learning experiences they start learning as an infant. Moreover, it can determine frequencies of food consumption of an individual, thus, making it one major factor in determining the breakfast practices of clinical nursing students (Vabø & Hansen, 2014).

Despite these investigations, there is still paucity in studies about the factors that influence the adoption of healthy behaviors of clinical nursing students (Ahmed & El Badawy, 2016; Hosseini et al., 2015). Also, clinical nursing students have early morning duties that might affect their breakfast practices. Thus, determining the factors that influence the clinical nursing students' health behaviors, particularly, their breakfast practices is needed. Therefore, the study determined the cognitions, food preferences, and breakfast practices of the clinical nursing students in a university in the Philippines for the academic year 2019-2020.

Statement of the Problem

This study sought to determine the cognitions, food preferences, and breakfast practices of clinical nursing students. Specifically, the study answered the following sub-problems:

1. What is the extent of cognitions of clinical nursing students in terms of the following:
   a. Knowledge
   b. Locus of control
   c. Self-efficacy
2. What is the extent of food preference of the respondents based on the following:
   a. Health
   b. Sensory quality
   c. Convenience
   d. Cost
   e. Familiarity
3. What is the extent of breakfast practices of the clinical nursing students?
4. Is there any significant relationship between cognitions and breakfast practices of the clinical nursing students.
5. Is there any significant relationship between food preferences and breakfast practices of the clinical nursing students.
6. Is there any significant difference in breakfast practices of the respondents when the following socio-demographic profile variables are considered:
   a. Sex
   b. Year level
   c. Meal arrangement
   d. Food allowance
7. Which of the following variables significantly predict breakfast practices of the clinical nursing students?
   a. Cognitions
   b. Food Preferences
   c. Sex
   d. Year level
   e. Meal arrangement
   f. Food allowance

Methodology

This study utilized descriptive-correlational design to determine the influence of cognitions and food preferences on breakfast practices.

Population and Sampling Techniques

The population of this study was the

clinical nursing students enrolled during the first semester of the academic year 2019-2020. Among the respondents, 63 were second year, 28 were third year, 30 were fourth year clinical nursing students. Overall, 121 clinical nursing students were the respondents of this study. Purposive sampling technique was utilized upon choosing the respondents of the study. Clearance from the University's Ethics Review Board was sought prior to the conduct of the study to ensure that the study follows the ethical protocols of research.

Demographic Profile of the Respondents

The respondents' socio-demographic profile considered in this study includes sex, year level, meal arrangement, and food allowance. Most of the respondents were male which contributed 69% (n = 84) of the sample while 31% (n = 37) were females. Out of the 121 respondents involved in this research, 51% (n = 64) were second year, 23% (n = 28) were third year, and 24% (n = 29) were fourth years. This shows that half of the respondents were second year clinical nursing students. Most of the respondents were cafeteria boarders which contributed to 77% (n = 87) of the sample and 23% (n = 28) were non-cafeteria boarders. The cafeteria load was utilized as the basis for the monthly food allowance leveling. The majority of the respondents had an estimated monthly food allowance of Php 3,000 – Php 3,999. This shows that most of the respondents have a plan C cafeteria load.

Instrumentation

The researchers constructed a questionnaire patterned after previous researches. To establish the instrument's content validity, the instrument was reviewed by experts in research, statistics, nutrition, and English language/grammar. The final questionnaire had four sections: (1) the socio-demographic profile of the respondents which include the sex, year level, meal arrangement, and food allowance; (2) the cognitions of the respondents such as knowledge, locus of control and self-efficacy; (3) the food preferences of the respondents such as health, sensory quality, convenience, cost, and familiarity and; (4) the breakfast practices of the respondents. The first section contains the respondent's socio-demographic profile such as sex, year level, meal arrangement, and food allowance. The second, third, and fourth sections of the research instruments contain 93 items: 60 for cognitions (35 for knowledge, 15 for the locus of control, and 10 for self-efficacy), 18 for food preferences and 15 for breakfast practices. To measure the extent of the respondent's locus of control, self-efficacy, food preferences, and breakfast practices knowledge, the researcher utilized Likert scale.

Analysis of Data

The gathered data was encoded and analyzed using Statistical Package for Social Science (SPSS) software version 23. The specific statistical treatments that were used are the following:

Frequency distribution and percentage were utilized to determine the socio-demographic profile characteristics of the respondents. Mean and standard deviation were employed to determine the cognitions in terms of level of knowledge, locus of control, and self-efficacy; food preferences such as health, sensory quality, convenience, cost, and familiarity; and extent of breakfast practices. Pearson's product – moment correlation coefficient was performed to determine the relationship between cognitions, and food preferences to breakfast practices. Analysis of variance (ANOVA), and t-test were used to examine the significant differences in the breakfast practices of the students when they were grouped according to sex, year level, meal arrangement in terms of cafeteria boarder and non-cafeteria boarder, and food allowance. Regression analysis was used to determine

which of the cognitions, food preferences, and the respondents' socio-demographic profile significantly predict breakfast practices.

Results and Discussion

The Extent of Cognitions of the Clinical Nursing Students

Level of knowledge. Table 1 presents the knowledge level of clinical nursing students. It shows that the respondent's overall knowledge mean score of the correct answer was 22.66 with a SD of 4.59 interpreted as high. The low standard deviation of the overall mean on the self-efficacy construct indicates uniformity of the respondent's knowledge. The lowest score among clinical nursing students was eight and the highest score was 30.

Table 1.
Level of Knowledge

	Mean	SD	VI
Knowledge	22.66	4.59	High

Legend:
0 - 8 – Very Low; 9 – 17 – Low; 18 - 26 – High; 27 -35 – Very high

The high level of knowledge of the respondents suggests that clinical nursing students are equipped with basic knowledge and capable in giving proper nutritional care and intentional concern in improving the nutritional status and further improving the quality of life of the patients they encounter (Blandón et al., 2017; Buxton & Davies, 2013Evagelou et al., 2014). However, the results of the knowledge questions do not support the study of Yalcin et al. (2013) which indicates that nurses' has poor knowledge on nutrition.

Table 2 presents the results of the knowledge questions. In item number one, 98.4% of the respondents were able to correctly answer that ice cream have high added sugar, while only 14.6% of the respondents were able to correctly answer that diet cola have low added sugar. In item number two, 94.3% of the respondents were able to correctly answer that canned soup are high in salt, while only 25.2% of the respondents were able to correctly answer that breakfast cereals are high in salt. In item number three, 91.1% of the respondents were able to correctly answer that oats are high in fiber, while only 52.8% of the respondents were able to correctly answer that oats are low in fiber. In item number four, 94.3% of the respondents were able to correctly answer that poultry (chicken) contains protein, while only 52% were able to correctly answer that butter do not contain protein. In item number five, 87% of the respondents were able to correctly answer that pasta is considered as starchy food, while only 52.8% were able to correctly answer that cheese is not considered as starchy food. In items number six, 90% were able to correctly answer that butter contains cholesterol, while only 32.5% were able to correctly answer that sunflower oil does not contain cholesterol.

For item number seven, 54% of the respondents were able to correctly answer that fish contains more trans-fat compared to biscuits, cakes, and pastries. For item number eight, 71.5% of the respondents were able to correctly answer that carbohydrates contain more calories than protein. In item number nine, 90.2% of the respondents were able to correctly answer that processed foods contain more salt compared to unprocessed foods. In item number 10 32.5% of the respondents were able to correctly answer that the amount of calcium in a glass of whole milk compared to a glass of skimmed milk is equal.

Strength on the locus of control. Table 3 illustrates the strength or the predominant locus of control of the respondents. The result shows that the predominant locus of control of

clinical nursing students was internal with a mean of 3.20 and a SD of .45, followed by external: powerful others with a mean of 2.32 and a SD of .68, and external: chance with a mean of 2.14 and a SD of .64. This means that they had strong internal, weak external (powerful others), and weak external (chance). The low SD of the overall mean on each locus of control indicates uniformity of the respondent's control over their breakfast practices. The findings of this study suggest that many clinical nursing students believed that their breakfast practices were a personal responsibility, that they have a sense of control over their health.

The findings are similar to the result of the study of Deluga et al. (2018) and Zielińska-Więczkowska (2016) on health locus of control where the predominant locus of control of the respondents found to be internal, followed by external (powerful others), and external (chance). Locus of control measures the extent to which a person believes actions (by him or herself, by an agent, or by chance) affect outcomes (Słopiecka & Chrapek 2019). Thus, a person who believes that healthy practices depend on their behavior has an internal locus of control. Conversely, a person who believes that having a healthy breakfast practices depends on luck or the influence of others has an external locus of control. Moreover, according to Słopiecka and Chrapek (2019), personal choice of the kind of chosen behavior reflects the individual's level of general knowledge. The higher the internal locus of control of a person the more aware they become of the responsibilities they have for their health and health of individuals with whom or for whom they work (Deluga et al., 2018).

Table 2
Knowledge Responses

Items	Percentage of Correct Response
1. The following foods and drinks are high in added sugar.	
a. Diet cola drinks	14.6
b. Natural yogurt	66.7
c. Ice cream	98.4
d. Tomato ketchup	52.0
e. Melon Juice (Tetra pack)	87.0
2. The following foods are high in salt.	
Breakfast cereals	25.2
Frozen vegetables	74.8
Bread	30.1
Baked beans	58.5
Red meat	39.0
Canned soup	94.3
3. The following foods are high in fiber.	
Oats	91.1
Bananas	74.0
White rice	56.1
Eggs	74.8
Potatoes with skin	69.1

Pasta	52.8
4. The following foods contain protein.	
Poultry (Chicken)	94.3
Cheese	72.4
Fruit	56.1
Baked beans	86.2
Butter	52.0
Nuts	82.9
5. The following foods are considered as starchy foods.	
Cheese	52.8
Pasta	87.0
Potatoes	74.8
Nuts	60.2
6. The following foods contain cholesterol.	
Olive oil	38.2
Butter	90.2
Sunflower oil	32.5
Eggs	78.9
7. Fish contains more trans-fat compared to biscuits, cakes, and pastries.	54.5
8. Carbohydrates contain more calories than protein.	71.5
9. Processed foods contain more salt compared to unprocessed foods.	90.2
10. The amount of calcium in a glass of whole milk compared to a glass of skimmed milk is equal.	32.5

Table 3
Extent of Respondent's Locus of Control

Statements	M	SD	Scaled Responses	VI
Internal Locus of Control				
1. If I get sick because of not eating my breakfast, it is my behavior which determines how soon I get well.	2.91	.78	Agree	
2. If I can follow my daily schedule carefully, I can eat my breakfast regularly.	3.17	.77	Agree	
3. If I practice healthy breakfast practices, I can stay healthy.	3.41	.60	Agree	
4. If I don't eat my breakfast, it is my fault.	3.24	.81	Agree	
5. I am in control of my breakfast practices.	3.24	.73	Agree	
6. The main thing which affects my breakfast practices is because of the decisions that I make.	3.21	.74	Agree	
Overall Internal Locus of Control	**3.20**	**.45**	**Agree**	**Strong**
External (Powerful Others) Locus of Control				

1. My family has a lot to do with my breakfast practices.	2.63	.98	Strongly Agree	
2. Health professionals determine my breakfast practices.	2.26	.87	Disagree	
3. Having regular contact with my physician is the best way to practice healthy breakfast practices.	2.33	.89	Disagree	
4. Regarding my breakfast practices, I can only do what my doctor tells me to do.	2.05	.82	Disagree	
Overall external (powerful others)	**2.32**	**.68**	**Disagree**	**Weak**
External (Chance) Locus of Control				
1. Luck plays a big part in determining how soon I will recover from an illness.	1.86	.83	Disagree	
2. My healthy breakfast practices are largely a matter of good fortune.	2.29	.95	Disagree	
3. Most things that affect my breakfast practices happen to me by accident.	2.17	.82	Disagree	
4. If it's meant to be, I will be able to consume my breakfast.	2.50	.94	Disagree	
5. No matter what my breakfast is, I will not consume breakfast.	1.86	.90	Disagree	
Overall external (chance)	**2.14**	**.64**	**Disagree**	**Weak**

Legend:
1.00 - 1.50 – Very weak; 1.51 - 2.50 – Weak; 2.51 - 3.50 – Strong; 3.51 - 4.00 – Very strong

Level of self-efficacy. Table 4 presents the self-efficacy level of clinical nursing students. It shows that generally, the respondents answered, "I can do it" in most items resulting to a self-efficacy mean of 3.42 with a SD of .54 interpreted as high. This means that the clinical nursing students have a high level of confidence in their ability to practice breakfast practices. The low standard deviation of the overall mean on the self-efficacy construct indicates uniformity of the respondent's confidence to perform tasks regarding breakfast practices.

Table 4
Extent of Respondent's Self-Efficacy

Statements	M	SD	Scaled Responses	VI
1. I can manage to stick to a healthy breakfast even if I need a long time to develop the necessary routines.	3.05	.68	I Can Do It	
2 I can manage to stick to a healthy breakfast even if I have to try several times until it works.	3.09	.59	I Can Do It	
3 I can manage to stick to a healthy breakfast even if during eating out and there's no much choice.	2.87	.71	I Can Do It	
4 I can manage to stick to a healthy breakfasteven if I do not receive a great deal of support from others when making my first attempts.	2.98	.71	I Can Do It	

5 I can manage to stick to a healthy breakfast even if I have to make a detailed plan.	3.04	.66	I Can Do It	
6. The main thing which affects my breakfast practices is because of the decisions that I make.	3.21	.74	Agree	
6. I can manage to get/prepare and eat my breakfast even if I have a hectic schedule.	2.58	.79	I Can Do It	
7. I can manage to get/prepare and eat my breakfast even if I have to struggle waking up early in the morning.	2.49	.87	I Cannot Do It	
8. I can manage to get/prepare and eat my breakfast even during in stressful days.	2.61	.86	I Can Do It	
9. I can manage to get/prepare and eat my breakfast even if I have to eat it alone.	3.00	.82	I Can Do It	
10. I can manage to get/prepare and eat my breakfast even if I only have bread for breakfast.	3.07	.80	I Can Do It	
Overall Self-Efficacy	**2.88**	**.54**	**I Can Do It**	**High**

Legend: 1.00 - 1.50 – Very low; 1.51 - 2.50 – Low; 2.51 - 3.50 – High; 3.51 - 4 – Very high

There is one item that shows low self-efficacy such as "I can manage to get/prepare and eat my breakfast, even if I have to struggle waking up early in the morning" with a mean of 2.49 and a SD of .87. The result of this study agrees with the study of Zielińska-Więczkowska (2016) which indicates that most of the respondents (62.8%) in their study scored high in self-efficacy. Self-efficacy beliefs influence goals and aspirations. The stronger the perceived self-efficacy, the higher the goals of an individual and the stronger their commitment to them.

People with high self-efficacy expect to have positive outcomes. Those of low self-efficacy expect their efforts to have poor outcomes (Zielińska-Więczkowska, 2016). Self-efficacy beliefs also evaluate how challenges and weaknesses are viewed. People of low self-efficacy easily believe the ineffectiveness of effort in times of difficulties. They easily quit trying. Those of high self-efficacy view difficulties as resolvable by the development of self-management skills and consistent effort (Bandura, 1977).

The Extent of Food Preference of the Clinical Nursing Students

Table 5 to 9 show the extent of the food preferences such as health, sensory quality, convenience, cost, and familiarity of clinical nursing students. The proceeding discussion will cover these variables, respectively.

Health. Table 5 presents the respondents' food preference in terms of health. The result shows that the overall food preference in terms of health was moderately healthy with a mean of 3.00 and a SD of .40 which means that clinical nursing students can still stick to have healthy food choices even though they have hectic schedules. The low standard deviation of the overall mean on the food preference in terms of health indicates uniformity of the respondent's food preference in terms of health.

Table 5
Extent of Respondent's Food Preference in Terms of Health

Statements	M	SD	Scaled Responses	VI
It is important to me that the food I eat on a typical day:				
1. Contains fruits	3.42	.79	Moderately important	
2. Contains vegetables	3.41	.83	Moderately important	
3. Is high in sugar*	2.93	.83	Moderately important	
4. Is high in salt *	2.91	.80	Moderately important	
5. Is low in fat	2.24	.95	A little important	
6. Is high in fiber	3.21	.81	Moderately important	
7. Contains fewer preservatives	2.88	1.04	Moderately important	
Overall health	**3.00**	**.40**	**Moderately important**	**Moderately Healthy**

Legend:
1.00 - 1.50 – Unhealthy; 1.51 - 2.50 – Moderately Unhealthy; 2.51 - 3.50 – Moderately healthy; 3.51 - 4.00 – Healthy
**negatively stated items were re-coded*

One of the item that showed that there is moderately unhealthy food preference in terms of health such as "it is important to me that the food I eat on a typical day, is high in fat" with a mean of 2.24 and a SD of .95. The result is consistent to the study of Conti et al. (2018), which indicates that university students have an adequate healthy food habit.

Sensory quality. Table 6 presents the respondents' food preference in terms of sensory quality. The result shows that the overall food preference in terms of sensory was "good" with a mean of 3.41 and a standard deviation of .64 which means that clinical nursing students preferred foods that have good sensory quality. The low SD of the overall mean on the food preference indicates a sensory quality uniformity of the respondents' food preference.

Table 6
Extent of Respondent's Food Preference in Terms of Sensory Quality

Statements	M	SD	Scaled Responses	VI
It is important to me that the food I eat on a typical day:				
1. Smells appealing	3.28	.75	Moderately important	
2. Looks appealing	3.41	.70	Moderately important	

2. Has a pleasant texture	3.37	.74	Moderately important	
3. Tastes good	3.59	.65	Very important	
Overall Sensory Quality	**3.41**	**.64**	**Moderately important**	**Good**

Legend:
1.00 - 1.50 –Poor; 1.51 - 2.50 – Fair; 2.51 - 3.50 – Good; 3.51 - 4.00 – Very Good

There is one item that shows very important food preference in terms of sensory quality such as "it is important to me that the food I eat on a typical day tastes good" with a mean of 3.59 and a SD of .65. The result of this study agrees with the study of Deliens et al. (2014), which indicates that most of the respondents reported that taste is the most important factor influencing their food choices. However, taste can make students eat unhealthily, because most of the food that taste good nowadays manipulates the human taste buds by adding too much artificial flavoring.

Moreover, most tasteful foods are high in fat, salt, and sugar such as ice cream, fast food, and processed foods. Supporting it, Abraham, Noriega, and Shin (2018), research have found in their research that almost half of their participants (65.3%) had consumed processed food every day or more than once a day. On the other hand, healthy foods can taste appealing by learning how to cook and season them smartly (Deliens et al., 2014).

Convenience. Table 7 shows the extent of the food preference of clinical nursing students in terms of convenience. The result shows that the overall food preference was moderately convenient with a mean of 3.29 and a SD of .81, which means that clinical nursing students preferred foods that are moderately convenient. The low SD of the overall mean on the food preference construct indicates uniformity of the respondent's food preference.

Table 7
Extent of Respondent's Food Preference in Terms of Convenience

Statements	M	SD	Scaled Responses	VI
It is important to me that the food I eat on a typical day:				
1. Is easy to prepare	3.29	.81	Moderately important	
2. Takes no time to prepare	2.95	.96	Moderately important	
3. Can be bought in shops close to where I live	3.13	.79	Moderately important	
Overall Convenience	**3.41**	**.64**	**Moderately important**	**Good**

Legend:
1.00 - 1.50 – Inconvenient; 1.51 - 2.50 – Moderately inconvenient; 2.51 - 3.50 – Moderately convenient; 3.51 – 4.00 – Very convenient

The result of this study agrees with the study of Deliens et al. (2014) which indicates that most of the respondents choose to spend their time on other activities than cooking, especially when they must cook only for themselves. In addition, the study of Bernardo et al. (2017) agrees to the results when they indicate that having lack of time, and lack of cooking skills, cooking knowledge and easy to access to unhealthy and convenience foods, including fast foods are the facilitators of and barriers to eating practices in adolescents and young adults. Thus, with that barriers, students tend to consume food that falls in the category of convenient food.

Cost. Table 8 shows the extent of the food preference of clinical nursing students in terms of cost. The result shows that the respondents prefer very economical food with a mean of 3.54 and a SD of .68, which means that clinical nursing students preferred foods that are less expensive. The low SD of the overall mean on the food preference construct indicates uniformity of the respondent's food preference.

Table 8
Extent of Respondent's Food Preference in Terms of Cost

Statements	M	SD	Scaled Responses	VI
It is important to me that the food I eat on a typical day:				
1. Fits my budget	3.54	.68	Very important	
Overall Cost	**3.41**	**.64**	**Moderately important**	**Good**

Legend:
1.00 - 1.50 – Uneconomical; 1.51 - 2.50 – Moderately uneconomical; 2.51 - 3.50 – Moderately economical; 3.51 - 4.00 – Very economical

An implication of the result is the possibility that respondents are independent of their parents and are financially unstable, thus, as students they prefer foods that are very economical (Bernardo et al. 2017).

Familiarity. Table 9 shows the extent of the food preference of clinical nursing students in terms of familiarity. The result shows that the the respondents prefer moderately familiar food with a mean of 3.13 and a SD of .76, which means that clinical nursing students preferred foods that are moderately familiar. The low SD of the overall mean on the food preference construct indicates uniformity of the respondent's food preference.

Table 9
Extent of Respondent's Food Preferences in Terms of Familiarity

Statements	M	SD	Scaled Responses	VI
It is important to me that the food I eat on a typical day:				
1. Is what I usually eat	3.26	.84	Moderately important	
2. Is familiar	3.20	.86	Moderately important	

3. Is like the food I ate when I was a child	2.92	.95	Moderately important	
Overall Familiarity	**3.13**	**.76**	**Moderately important**	**Moderately Familiar**

Legend:
1.00 - 1.50 – Unfamiliar; 1.51 - 2.50 – Moderately Unfamiliar; 2.51 - 3.50 – Moderately Familiar
3.51 - 4.00 – Very Familiar

The result of this study agrees with the study of Deliens et al. (2014) which indicates that students eating practices are a result of eating habits created during childhood and adolescence. Thus, familiarity can greatly affect the food preference of an individual.

The Extent of Breakfast Practices of the Clinical Nursing Students

Breakfast practices. Table 10 presents the extent of breakfast practices of clinical nursing students. It revealed that the respondent's overall breakfast practices mean of 3.13 with a SD of .76 is interpreted as good. This implies that clinical nursing students can manage to have good breakfast practices even though they have hectic schedule.

Table 10
Extent of the Breakfast Practices of the Respondents

Statements	M	SD	Scaled Responses	VI
1. I eat breakfast.	2.69	.95	Often	
2. I include fruits for my breakfast.	2.20	.87	Sometimes	
3. I include vegetables for my breakfast.	2.45	.96	Sometimes	
4. I include sugar-sweetened beverages (sweetened tea, coffee drinks, non-diet soft drinks/sodas, flavored juice drinks, sports drinks, energy drinks, and electrolyte replacement drinks) to my breakfast.*	2.91	.99	Sometimes	
5. I eat whole grain food (brown rice, whole-wheat bread, and pastas) for breakfast.	2.51	.89	Often	
6. I eat refined grains and baked goods (white rice, pasta, bread, doughnuts, cookies, muffins, crackers, cakes, and other pastries) for breakfast.*	2.30	.94	Sometimes	
7. I eat fast food for breakfast.*	3.11	.89	Often	
8. I eat breakfast on the way to school/duty.*	2.55	.97	Often	
9. I eat breakfast before leaving home/dorm.	2.37	.98	Sometimes	
10 I skip breakfast because I do not have enough time to prepare and consume it.*	2.31	1.02	Sometimes	
11. I eat meat (beef, pork, lamb, chicken, turkey) for breakfast.*	2.89	1.00	Often	
12. I eat processed meats (sausage, hot dogs, bacon, tocino, salami, bologna, meatloaf) for breakfast.*	2.95	.98	Often	

13. I eat 2 pieces of eggs per day.*	2.93	.88	Often	
14. I eat sweets (ice cream, chocolates, candies, desserts) for breakfast.*	3.24	.91	Often	
15. I include plant-based proteins (legumes, whole grain, nuts and seeds, vege-meat, tofu, gluten) for breakfast.	2.46	.93	Sometimes	
Overall Breakfast Practices	**2.66**	**.31**	**Often**	**Good**

**negatively stated items were re-coded*
Legend:
1.00 - 1.50 – Poor; 1.51 - 2.50 – Fair; 2.51 - 3.50 – Good; 3.51 - 4.00 – Very Good

The result of this study do not agree with the study of Ross et al. (2017) and Hosseini et al. (2014), which indicate that clinical nursing students do not perform needed activities for a healthy lifestyle, which may affect their image and performance as health care providers. The result of breakfast practices of the clinical nursing students is remarkable because they can manage to have good breakfast practices amidst their hectic schedules. It can also mean that they are practicing healthy lifestyle.

Relationship of Cognitions and Food Preferences to Breakfast Practices

Relationship between cognitions and breakfast practices. Table 11 presents the relationship of cognitions in terms of knowledge, locus of control, and self-efficacy to breakfast practices. Findings show significant relationship between locus of control in terms of external (chance). The direction of the relationship between this variable to breakfast practices was negative, implying that the lower the scores of this variable the more positive was the breakfast practices. While cognitions in terms of knowledge, locus of control in terms of internal and external (powerful others) locus of control do not show any significant relationship between breakfast practices. Thus, the hypothesis that there is no significant relationship between these variables is rejected.

Table 11
Relationship Between Cognitions and Breakfast Practices

	Breakfast Practices		
Cognitions	***r***	***p***	**VI**
Knowledge	.870	.015	Not significant
Locus of Control			
Internal	.697	.035	Not significant
External (powerful others)	.568	-.052	Not significant
External (chance)	-.252**	.005	Significant
Self-efficacy	.510	.060	Not significant

*$p < 0.01$**, $p < 0.05$**

Zielińska-Więczkowska (2016), stated that what is particularly unfavorable is the assumption that one's health is subject to chance; if one's health is subject to chance, it can be a

major reason for an individual to lose control over an individual's health. However, having the sense of being capable and determined to reach one's goals is an important key in modifying health-related behaviors (Hosseini et al. 2015; Zielińska-Więczkowska, 2016). Thus, the result is remarkable because it implies that the lower the external (chance) locus of control, the better is the control of the respondents over their health-related practices such as breakfast practices.

Relationship between food preferences and breakfast practices. Table 12 presents the relationship of food preferences in terms of health, sensory quality, convenience, cost, and familiarity to breakfast practices. Findings show significant relationship between food preferences in terms of sensory quality with a significant level of -.281; convenience with a significant level of -.191; and familiarity with a significant level of .002. The direction of the relationship between these variables to breakfast practices was negative, implying that the lower the scores of these variables the more positive was the breakfast practices. Food preference in terms of health and cost do not show any significant relationship between breakfast practices. Thus, the hypothesis that there is no significant relationship between these variables is rejected.

Table 12
Relationship Between Food Preferences and Breakfast Practices

	Breakfast Practices		
Food Preferences	***r***	***p***	**VI**
Health	.194	.118	Not significant
Sensory Quality	.045	-.181*	Significant
Convenience	.034	-.191*	Significant
Cost	.302	-.094	Not significant
Familiarity	.002	-.281**	Significant

*$p < 0.01$**, $p < 0.05$**

In terms of sensory quality, the results imply that the less particular the respondents in terms of sensory quality, the more they will have better breakfast practices; thus, they can manage to practice healthy breakfast practices even the food has low sensory appeal. However, the result of this study does not agree with the study of Deliens et al. (2014) which indicates that most of the respondents of their study reported that taste is the most important factor influencing their food choices. In terms of convenience, the results imply that the less convenient the foods are, the more they will have better breakfast practices. The result also agrees with the study of Deliens et al. (2014), where participants in their study reported that they would rather choose to spend their time on other activities than cooking, especially when they must cook only for themselves. Moreover, participants in their study also reported that they would rather choose ready to eat foods, especially during their exam week. In terms of familiarity, the results imply that the more unfamiliar the food preferences are, the more they will have better breakfast practices. The result also agrees to the study of Deliens et al. (2014), as participants in their study reported that they had regular eating habits. According to the students, these eating practices are a result of eating habits created during childhood and adolescence, thus, they prefer familiar foods.

Difference in the Breakfast Practices of the Respondents When Grouped According to Socio-demographic Profile

Table 13 presents the differences in respondents' breakfast practices when they are grouped according to their socio-demographic profile such as sex, year level, meal arrangement, and food allowance.

Breakfast practices according to sex. Table 13 presents the differences in breakfast practices when the respondents were grouped according to gender. There is no significant difference in the breakfast practices (F = -.311, p = .756) between male and female students. The extent of breakfast practices for Male (M = 2.66, SD = .32) and female (M = 2.64, SD =.30) are the same.

Table 13
Difference in Breakfast Practices According to Sex

Dependent Variable	Sex	N	M	SD	F	p	VI
Breakfast Practices	Female	38	2.64	.30	-.311	.756	Not significant
	Male	85	2.66	.32			Not significant

p < 0.05

The results imply that the hypothesis that there is no significant difference in the breakfast practices of the respondents when they are grouped according to sex is not rejected. However, the findings are not consistent with several studies. Some studies (Fiuza et al., 2017; Monzani et al., 2019) have found that unhealthy breakfast practices are more common among females. Breakfast practices according to year level. Table 14 presents the differences in breakfast practices when the respondents were grouped according to year level. There was no significant relationship in year level of the respondents between 2nd year, 3rd year, and 4th year and their breakfast practices (F – .695, p – .501).

Table 14
Difference in Breakfast Practices According to Year Level

Dependent Variable	Sex	N	M	SD	F	p	VI
Breakfast Practices	2nd year	63	2.66	.33	.695	.501	Not significant
	3rd year	38	2.70	.26			
	4th year	20	2.60	.32			

p < 0.05

The results imply that the year level does not affect the breakfast practices of the respondents. Thus, the hypothesis that there is no significant difference in the breakfast practices of the respondents when they are group according to year level is not rejected.

Breakfast practices according to meal arrangement. Table 15 presents the differences in breakfast practices when the respondents were grouped according to their meal arrangement. There was no significant relationship in year level of the respondents between cafeteria boarder

and non-cafeteria boarder in terms of their breakfast practices (F – 1.707, p – .090).

Table 15
Difference in Breakfast Practices According to Meal Arrangement

Dependent Variable	Sex	N	M	SD	F	p	VI
Breakfast Practices	Cafeteria boarder	89	2.7	0.306	1.707	.090	Not Significant
	Non-cafeteria boarder	28	2.6	0.305			

p < 0.05

The results imply that the meal arrangement does not affect the breakfast practices of the respondents. Thus, the hypothesis that there is no significant difference in the breakfast practices of the respondents when they are group according to year level is not rejected. Breakfast practices according to food allowance. Table 16 presents the differences in breakfast practices when the respondents were grouped according to their food allowance. There is no significant difference in the breakfast practices when the food allowance is considered (F – 1.417, p – .243).

The results imply that the food allowance of the participants per month does not affect the breakfast practices of the respondents. Thus, the hypothesis that there is no significant difference in the breakfast practices of the respondents when they are group according to their food allowance is not rejected.

Table 16
Difference in Breakfast Practices According to Meal Arrangement Per Month

Dependent Variable	Sex	N	M	SD	F	p	VI
Breakfast Practices	<2500	16	2.66	.33	1.417	.243	Not Significant
	2500-2999	18	2.70	.26			
	3000-3999	40					
	>4000	27					

p < 0.05

Predictors of Breakfast Practices

Table 17 present the predictors of breakfast practices. It shows the variables that entered the regression analysis for breakfast practices. There are four predictors of breakfast practices. These are food preferences such as familiarity, external (chance) locus of control, meal arrangement (cafeteria boarder), and food preference in terms of health (R = .503, R^2=.253,F (4.94)=7.947,p=.000).

Together, these variables explain 25.3% of the variance in breakfast practices, of which 10.4% can be explained by food preference such as familiarity (t – -3.350, p – .001) as the biggest contributor, 6.4% can be explained by external (chance) locus of control (t – -2.161, p – .033), 4.4% can be explained by meal arrangement (cafeteria boarder: t – -2.161, p – .033) and 4.1% can be explained by food preference such as health (t – 2.258, p – .026).

Table 17
Predictors of Breakfast Practices

Independent	**Unstandardized Coefficient**		**Standardized Coefficient**	***t***	***p***	**R^2**
	B	**Std Error**	***B***			
Constant	2.944	.266		11.050	.000	.104
Food preference – familiarity	-.130	.039	-.310	-3.350	.001	.168
External (chance) locus of control	-.098	.045	-.199	-2.161	.033	.212
Meal arrangement (non-cafeteria boarder)	-.173	.071	-.219	-2.439	.017	.253
Food preference - health	.168	.074	.210	2.258	.026	.104

Unstandardized coefficients show students who do not consider familiarity of food, who do not view their health behavior as a result of chance, who consider health benefits of foods, and who are cafeteria boarders are more likely to have better breakfast practices. The equation for prediction of breakfast practices is:

BP = 2.9 –.13 food preference (familiarity) –.098 external (chance) locus of control –.17 meal arrangement (non-cafeteria boarder) +.168 Food preference (health)

Thus, the hypothesis that none of the cognitions, food preferences, and the respondents' socio-demographic profile do not significantly predict breakfast practices of the clinical nursing students is rejected.

Conclusions and Recommendations

The study provides insights into the breakfast practices of clinical nursing students and their relationship to cognitions such as knowledge, locus of control, and self-efficacy, and food preferences. Clinical nursing students have a high level of knowledge on nutrition, predominance of internal locus of control, and high self-efficacy. Moreover, their breakfast practices were good. The good breakfast practices of clinical nursing students are encouraging because it implicates that they have good breakfast practices despite their hectic schedules and early morning duties as clinical nursing students. The clinical nursing students prefer moderately healthy, moderately convenient, moderately familiar, good, and very economical food.

However, only the external (chance) locus of control resulted to significant relationship to breakfast practices. External (chance) locus of control is negatively related to breakfast practices. On the other hand, the direction of the relationship between food preferences in terms of sensory quality, convenience, and familiarity was negative, implying that the lower the food preferences in terms of sensory quality, convenience, and familiarity the better was the breakfast practices.

There is also no significant difference in the breakfast practices between the respondents' socio-demographic profile such as sex, year level, meal arrangement, and food allowance of the respondents. Food preferences in terms of familiarity and health, cognition in terms of external (chance) locus of control, and meal arrangement (cafeteria boarders) are the significant predictors of breakfast practices. These predictors of breakfast practices can account only 23.5% of total variability in breakfast practices. Hence, there are still other determinants of breakfast practices. Results only established correlations between the cognitions in terms of external (chance) locus of control, and food preferences in terms of sensory quality, convenience, and familiarity and breakfast practices but not causal links.

A similar or comparative study on breakfast practices can be done using the same population of different universities, to further assess if the result is consistent with other clinical nursing students in different universities. Moreover, since the study only used self-reported data, which is susceptible to social desirability bias, further research that investigates the actual behavior of clinical nursing students should be done.

References

Abraham, S., Noriega, B. R., & Shin, J. Y. (2018). College students eating habits and knowledge of nutritional requirements. *Journal of Nutrition and Human Health, 02*(01). doi: 10.35841/nutrition-human-health.2.1.13-17

Acampado, E., & Valenzuela, M. (2018). Physical activity and dietary habits of Filipino college students. *Kinesiology, 50*(1), 57–67. doi: 10.26582/k.50.1.11

Ahmed, F. M., & El Badawy , R. E.-S. (2016). Health locus of control and health promoting behaviors among nursing and non-nursing students in Zagazig University, Egypt. *International Organization of Scientific Research, 5*(6), 28–35. doi: 10.9790/1959-0506042835

Alakaam, A. A., Castellanos, D. C., Bodzio, J. & Harrison, L. (2015). The factors that influence dietary habits among international students in the United States. J*ournal of International Students, 5*, 104–120.

Bandura, A. (1977). *Social Learning Theory*. New York: General Learning Press.

Bernardo, G. L., Jomori, M. M., Fernandes, A. C., & Proença, R. P. (2017). Food intake of university students. *Revista De Nutrição, 30*(6), 847-865. doi:10.1590/1678-98652017000600016

Blandon, J. A. P., Molina, A. A., Martin, M. R., & Maria De Las Mercedes Lomas Campos. (2017). Influence of nurse education on healthy lifestyle habits of students: A literature review. *Journal of Nursing & Care, 06*(02). doi: 10.4172/2167-1168.1000384

Buxton, C., & Davies, A. (2013). Nutritional knowledge levels of nursing students in a tertiary institution: Lessons for curriculum planning. *Nurse Education in Practice, 13*(5), 355–360. doi: 10.1016/j.nepr.2012.09.014

Conti, C., Costa, A., Balzaretti, C., Russo, V., & Tedesco, D. (2018). Survey on food preferences of university students: from tradition to new food customs? *Agriculture, 8*(10), 155. doi: 10.3390/agriculture8100155

Deluga, A., Bogdańska, P., Dobrowolska, B., Ślusarska, B., Bartoszek, A., & Szczekala, K. (2018). The health locus of control and health behaviours declared by students of health sciences. *Pielegniarstwo XXI Wieku / Nursing in the 21st Century, 17*(1), 10–17. doi.org/10.2478/pielxxiw-2018-0002

Evagelou, E., Vlachou , E., Polikandrioti , M., Koutelekos, I., Dousis, E., & Kyritsi, E. (2014). Exploration of nursing students' dietary habits. *Health Science Journal, 8*(4), 452–468.

Fiuza, R. F., Muraro, A. P., Rodrigues, P. R., Sena, E. D., & Ferreira, M. G. (2017). Skipping breakfast and associated factors among Brazilian adolescents. *Revista De Nutrição, 30*(5), 615-626. doi:10.1590/1678-98652017000500007

Gwin, J. A., & Leidy, H. J. (2018). Breakfast consumption augments appetite, eating behavior, and exploratory markers of sleep quality compared with skipping breakfast in healthy young adults. *Current Developments in Nutrition, 2*(11). doi: 10.1093/cdn/nzy074

Hopkins, L. C., Sattler, M., Steeves, E. A., Jones-Smith, J. C., & Gittelsohn, J. (2017). Breakfast consumption frequency and its relationships to overall diet quality, using healthy eating index 2010, and body mass index among adolescents in a low-income urban setting. *Ecology of Food and Nutrition, 56*(4), 297–311. doi: 10.1080/03670244.2017.1327855

Hosseini, M., Ashktorab, T., Taghdisi, M. H., Vardanjani, A. E., & Rafiei, H. (2014). Health-promoting behaviors and their association with certain demographic characteristics of nursing students of Tehran City in 2013. *Global Journal of Health Science, 7*(2). doi: 10.5539/gjhs.v7n2p264

Jiang, S.-Z., Lu, W., Zong, X.-F., Ruan, H.-Y., & Liu, Y. (2016). *Obesity and hypertension. Experimental and Therapeutic Medicine, 12*(4), 2395–2399. doi.org/10.3892/etm.2016.3667

Konwea, P., Ogunsile, S., & Olowoselu, M. (2016). Assessment of eating habits and nutritional status of nursing and midwifery students in Ekiti State Nigeria. *Journal of Scientific Research and Reports, 12*(2), 1–7. doi: 10.9734/jsrr/2016/29287

Reed, D. (2014). Healthy eating for healthy nurses: Nutrition basics to promote health for nurses and patients. *The Online Journal of Issues in Nursing, 19*(3).

Ross, A., Bevans, M., Brooks, A. T., Gibbons, S., & Wallen, G. R. (2017). Nurses and health-promoting behaviors: Knowledge may not translate into self-care. *AORN Journal, 105*(3), 267–275. doi: 10.1016/j.aorn.2016.12.018

Slopiecka, A., & Chrapek, M. (2019). Relationship between health related locus of control and health behaviour among university students . Sleep Medicine and Disorders: *International Journal, 3*(1), 10–15. doi: 10.15406/smdij.2019.03.00060

Vabø, Mette, and Håvard Hansen. (2014). The Relationship between Food Preferences and Food Choice: A Theoretical Discussion. *International Journal of Business and Social Science, 5*(7), 145–157.

Yalcin, N., Cihan, A., Gundogdu, H.; Ocakci, A. (2013). Nutrition knowledge level of nurses. *Health Science Journal*, 7(1), 99.

Zielińska-Więczkowska, H. (2016). Relationships between health behaviors, self-efficacy, and health locus of control of students at the universities of the third age. *Medical Science Monitor*, 22, 508–515. doi.org/10.12659/MSM.8949

Take a BREAK! A Workplace Health Promotion Program for Office Workers of a Private Sectarian University

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Abstract

The The objective of this study is to promote health in the workplace. Currently, there are many people in the worksite. The World Health Organization has now recognized the workplace as a priority setting for health promotion. It was mandated that small to large companies must make available health promotion programs in the workplace to lessen the employees' risks for non-communicable diseases. An intervention study was conducted among 23 selected workers of the Adventist University of the Philippines through convenient sampling utilizing one group pre-test/posttest design. The participants were asked to join a workplace health promotion program entitled "Take A Break!" done over four sessions, for up to two hours per session; in a specified venue inside the campus. In general, the mean score of the participants during the post test was 4.62 which is still interpreted as high. There was a .5 (12%) difference in scores of the participants from pre-test to post-test. The participants were tested on knowledge, attitude, and practice on physical activity, intermittent rest, hydration, and social health. Result showed an overall increase of 12% in knowledge and 4% in attitude. In terms of practice, there was significant a75% increase (from 37.5%) in physical activity and 25% increase (from 12.5%) in hydration, these results were significant. There was no change in intermittent rest and social health. The study was guided by Knowledge-Attitude-Behavior (KAB) model which posits that as knowledge accumulates, attitudes change; and that these changes in attitude promote behavior change. The recommendations of this study are about the duration of the program, conducting a program that will be attended by the different departments and good working partnership with the administrators, more marketing strategies also early planning and preparation and best timing.

Keywords: *workplace health promotion, KAP, non-communicable diseases*

The nursing profession is inevitably associateThe World Health Organization (WHO) recognized the workplace as one of the priority settings for health promotion because of its influence on the physical, mental, economic and social well-being of the workers. When the workers are healthy, they become more productive at work and are able to raise healthy families thus raising a healthy community. WHO also recognizes the workplace as an ideal setting to promote health in a wider scope since majority of the world's population is in the working age (16 years old and above) according to Populyst (2015).

In 2018, a study by Cabral was conducted on the health-related practices among workers in a selected private sectarian university. The health-related practices that were evaluated were the worker's physical activity, water intake, and activities during break time. The study revealed that out of 171 workers who answered the questionnaires, 58% were 40 years old and above; majority (61%) use their cars to go work and only 32% walk going to their work; 34% use the computer for 5-6 hours every day; 30% take their breaks every 3-5 hours; 70% take their break every 1-2 hours and 75% do sedentary activities during their break time. For their water intake, 50% consume more than 8 glasses of water per

day and the other 50% drink less than 8 glasses of water per day. In addition, there were 21% who said they do not have available drinking water in their office. In summary, the result revealed health concerns on physical activity and water intake in the workplace.

Less physical activity or sedentary lifestyle is considered to be one of the factors that lead to the growing number of non-communicable diseases worldwide which is the leading cause of death accounting to 68% of total deaths worldwide (WHO, 2008). It is also considered to be the main contributor to obesity and is estimated to cause not only 10-16% of cancers globally but also about 22% of ischaemic heart disease. According to Begg, Vos, Stevenson, Stanley, and Lopez (2007), its health risks are at levels comparable to the risk factors of smoking and alcohol use among the developed countries.

The working population especially in office settings has the higher occupational exposure to sedentary behavior due to long hours of sitting in their computers and desk (Brown, Bauman and Owen, 2009). The long periods of time spent in their work tables and computers increases their risk to possible health problems (Pandey, Salahuddin, Garg, Ayers, Kulinski, Anand & Berry, 2016). In addition, most of these workers go to their work with their vehicles lowering further their physical activity (Waters, Ling, Chu,Ng, Chia, Lim, & Müller-Riemenschneider, 2016). However, short and frequent breaks from sedentary activity can be a help in reducing sedentary time at work for employees (Mailey, Rosenkranz, Casey, & Swank, 2016)

In a study by Stanford University in the July 2017, Hong Kong residents appear to be the world's most active population, walking roughly 6 kilometers (km) on an average a day. In contrast, Indonesia was the most lethargic, walking only 4km a day, followed by Saudi Arabia, and Malaysia. The Philippines turned out to be the 4th least active in the world with only 4,008 steps or 4.6km a day (Angara, 2017).

Another area of concern is the water intake in the workplace. It is among the most common problems encountered in the workplace. Being hydrated or inadequate hydration can affect how a person feels and perform. According to the National Hydration Council (NHC, 2016) in UK, staying hydrated helps people in improving their work productivity, helps them to perform better in mental and physical aspects and also helps to offset possible safety risks. The recommend water intake according to Food and Nutrition Board of the Institute of Medicine is about 3.7 liters for men and 2.7 liters for women each day (MacGill, 2018).

The above stated concerns along with the WHO mandate and the Department of Labor and Employment (DOLE) recommendation to promote health in the workplace led the researchers to generate a program for office workers. The main goal of the program was to promote health in the workplace among office workers. Specifically, the program answered the following research questions:

1. Is there a difference in scores of the participants from pre-test to post-test in terms of knowledge about health in the workplace?
2. Is there a difference in scores of the participants from pre-test to post-test in terms of the following practices:
   a. Walking
   b. Taking naps
   c. Water drinking
   d. Stretching
   e. Socialization
   f. Work-life balance
3. Is there a difference in scores of the participants from pre-test to post-test in the overall attitude about health?

Methodology

The study used the quasi-experimental design to measure the effectiveness of the program in terms of knowledge, attitude, and behavior of the participants before and after the program using the pre and post-test questionnaires through purposive sampling. Thirty participants were from the different departments of AUP who are office workers. Only 23 were able to attend the program at least once; three were able to attend all four sessions and five were able to attend three out of four sessions. This program evaluated the eight participants who completed at least 3 sessions of the program. Among the eight participants, two are males and six are females; one is above 40 years old and seven are below 40 years old. Three participants were from the Psychology department, three from the Chemistry department, one from Nursing, and one from Theology department

A self-constructed 4-part pretest and post-test questionnaire based on literature was used to collect data on the knowledge, attitude, and behavior of participants on health in the workplace. The questionnaire was validated by an expert in the field. The first part covers the demographic data of the participants such as their age, gender, and department where they are working. The second part measures the level of the respondents' knowledge on health in the workplace such as physical and social health as well as ergonomics. The response options are "true" or "false" The third part measures about health practices of the participants. The response options are "yes" or "no" and the last part to measure the attitude of the respondent. The response options are likert scale. The test scores were interpreted using a five points scale.

Before conducting the program, a letter of request was submitted to AUP HR. When given the permission, the researchers set the final date and gave out invitations to the different offices and departments of AUP.

The pre-test questionnaires were distributed to each of the participants on the first day of the program before the first session started. The purpose of the program was explained. After the program, the post-test questionnaires were distributed only to the participants who answered the pre-test questionnaire.

Results and Discussion

During the pretest, the participants had a mean score of 4.12 on knowledge which can be interpreted as high. The question on which most of the participants had incorrect answer was on ergonomics, whether the keyboard should be higher or lower than the elbow. However, in the post-test five out of eight participants had improved scores. In general, the mean score of the participants during the post test was 4.62 which is still interpreted as high. There was a .5 (12%) difference in scores of the participants from pre-test to post-test. Overall, the knowledge level of the participants in terms of workplace health was high. Knowledge is an important part that promote behaviour changes (Yahya, Muhamad, Yusoff, 2012), in line with this, planning for increasing level of knowledge, attitude, and safe behavior can decrease workplace accidents and improve workers' health in different aspects (Nasab, Ghofranipour, Kazemneja, Tavakoli and Khavanin, 2009).Raising the productivity level of the workers' knowledge is critical to economic growth because they are the clear and growing majority of today's workforce (Voss, 2011).

Table 1

Pretest and Post-Test Scores of Participants on Knowledge

Participant No.	Pre-Test Score	Post-Test Score	Difference	% Change
1	4	5	1	25%
2	5	5	0	0%
3	4	5	1	25%
4	4	5	1	25%
5	4	5	1	25%
6	3	4	1	33%
7	4	4	0	0%
8	5	4	-1	-20%
AVERAGE:	**4.12**	**4.62**	**.5**	**12%**

Legend:
4-5 – High; 2-3 – Average; 0-1 - Low

The participants' health practices in the workplace is shown in Table 2. On the question whether they walk around every 2 hours after working in the computer, 3 (37.5%) answered yes during the pretest, 4 answered sometimes, and 1 answered no. During post-test, 6 (75%) answered yes, 2 (25%) answered sometimes, and none answered no. There were more participants who walk around every 2 hours after working in the computer after the program.

On the question whether the participants take naps during break time, 2 (25%) answered yes during pretest, 4 (50%) answered sometimes, and 2 (25%) answered no. During the post-test, still 2 (25%) answered yes, 5 (62.5%) answered sometimes, and 1 (12.5%) answered no. The number of participants who take naps during break time were the same in both pretest and post-test.

On the question whether participants bring their water bottles to work and drink at least 2 liters a day, only 1 (12.5%) answered yes, 6 (75%) answered sometimes, and 1 (12.5%) answered no during the pretest. When compared to the post-test, there was a slight change (12.5%) in the number of participants who answered yes and sometimes during post-test and no change in the number of those who answered no. This can be explained by the fact that the topic on hydration in the workplace was discussed in the same day the post-test was given.

On the question whether participants do stretch during break time, 4 (50%) answered yes during pre-test, 3 (37.5%) answered sometimes, and 1 (12.5%) answered no. During the post test, only 3 (37.5%) answered yes, 5 (62.5%) answered sometimes and none answered no. When compared during the post-test, there were more participants who answered they stretch sometimes during breaks but fewer answered yes.

On the question whether participants socialize with their workmates even outside the office, the number of participants who answered yes during the pretest and post-test was the same. On both tests, 6 (75%) answered yes, 2 (25%) answered sometimes and none answered no. Generally, all of the participants socialize with their workmates even outside the office.

The last question focuses on the life-work balance of the participants. It asks whether the participants usually bring some work at home. During pretest, none answered yes, 6 (75%) answered sometimes, and 2 (25%) answered no. However, during the post test, only 3

(37.5%) answered yes, 2 (25%) answered sometimes and 2 (25%) answered no. The number of participants who bring some work at home increased during post-test. This could be explained by the fact that the program was conducted during the finals week and majority of the participants are working college instructors.

Overall, there was an improvement in the physical activity of the participants in terms of walking after 2 hours of sitting in front of computer because sitting for more than three hours a day leads to almost 4% of all deaths (Rezende,et al., 2016). On the flip side, experts say that reducing your sitting time to less than three hours increases your life expectancy by an average 2.4 months (Quinn, 2016). However, not much in doing some stretching during break time. There was 12.5% increase in the number of participants who drink a least 2 liters of water per day. According to Boschmann, et al. (2003) drinking half a liter (17 ounces) of water was shown to increase metabolism by 24-30% for up to 1.5 hours. This means that drinking 2 liters of water every day can increase your total energy expenditure by up to 96 calories per day. No change in the number of participants who socialize with their workmates even outside the work place but more bring some of their work at home during the post-test.

Table 1

Pretest and Post-Test Scores of Participants on Knowledge

Questions	Pretest	Percentage	Post-Test	Percentage
1. Walking around every 2 hours of sitting in the computer				
Yes	3	37.5%	6	75%
Sometimes	4	50%	2	25%
No	1	12.5%	0	0%
2. Taking naps during break time				
Yes	2	25%	2	25%
Sometimes	4	50%	5	62.5%
No	2	25%	1	12.5%
3. Brings drinking water and drinks at least 2 liters during worktime				
Yes	1	12.5%	2	25%
Sometimes	6	75%	5	62.5%%
No	1	12.5%	1	12.5%
4. Does some stretching during break time				
Yes	4	50%%	3	37.5.5%
Sometimes	3	37.5%	5	62.5%
No	1	12.5%	0	0%
5. Socialize with colleague even outside the office				
Yes	6	75%	6	75%
Sometimes	2	25%	2	25%
No	0	0%	0	0%
6. Usually bring some work at home				
Yes	0	0%	3	37.5%
Sometimes	6	75%	2	25%

	No	2	25%	3	37.5%

The attitude of the participants in some health-related behaviors in the workplace is shown in Table 3. Generally, the attitude of the participants in health-related behaviors in the workplace is positive. When compared between the pretest and the post-test, there was a 4% change from the 2.66 mean during pretest and 2.75 in the post test. During the pretest, 75% of the participants believe in life-work boundaries, 75% share their work-related stress to someone close to them, 62.5% like taking breaks every after 2 hours of work and 75% is concerned about the one-time use of plastic cups. After the program, more participants (87.5%) believe in life-work boundaries. According to Leduc, Houlfort, and Bourdeau (2016), work-life balance is an important issue in today's world and the different strategies used by people to manage their work and their personal life can have a great impact. 87.5% share their work-related stress to someone close to them. There is some evidence that interventions that increase the frequency of shared activities between workers can improve worker well-being and performance (Daniels, Watsons, & Gedikli, 2017). Moreover, Pfeffer (2018) stated that if to the goal is to increase employees' health and well-being, focus on job control and social support, 75% like taking breaks every after 2 hours of work. Coulson, McKenna , and Field (2006) also mentioned that most of the employees who spent 30 to 60 minutes at lunch doing everything from yoga and aerobics to strength training and playing pick-up games of basketball and the result was six out of 10 workers said their time management skills, mental performance and ability to meet deadlines improved on days when they exercised according to the findings. Finally, still 75% were concerned with the one-time use of plastic cups.

Table 3

Participants' Attitude in Some Health-Related Behaviors in the Workplace

Participant No.	Mean Pre-Test	Mean Post-Test	Difference	% Change
1	2.5	2.5	0	0%
2	2.25	2.5	.25	11%
3	3	3	0	0%
4	2.75	3	.25	9%
5	3	3	0	0%
6	2.25	2.5	.25	11%
7	2.5	2.75	.25	10%
8	3	2.75	-.25	-8%
AVERAGE:	**2.66**	**2.75**	**0.90**	**4%**

Legend:

3 - Positive; 2 – Neutral; 1 – Negative

Conclusion and Recommendation

In conclusion, there was a 12% improvement in the knowledge of the participants regarding health in the workplace. Specifically, there was an improvement in the knowledge of the participants regarding ergonomics. In the participants' health practices, physical activity in

the workplace improved as more participants (75%) walk around every after 2 hours of sitting in the computer and those who do not do stretching, did stretching sometimes after the program.

Moreover, there was a 12.5% increase in the number of those who bring their drinking water and drink at least 2 liters of water per day. The number of participants who socialize with their colleagues even outside the workplace remained high but those who bring their work at home increased. Lastly, there was a 4% difference in the attitude of the participants after the program. Nonetheless, it remained positive before and after the program.

The researchers were able to identify several recommendations for the program:

1. In order to accurately gauge the effectivity of the program on the knowledge, skills, and attitude of the participants, the researchers recommend a longer duration of the program.
2. Conducting a program that will be attended by the different departments requires a good working relation with the administration and the HR. The researchers therefore recommend that administrators and HR support programs such as this not just for the sake of attendance but that more employees will benefit and learn. The researchers also recommend more organized programs on health promotion in the workplace as it has proven to be effective in improving employees' health and productivity.
3. For public health workers/students that would venture on this kind of program, the researchers recommend a good working partnership with the administrators, more marketing strategies and early planning and preparation and best timing. The researchers also recommend that programs such as this be conducted by departments as it is difficult to gather the different departments in a given time.

References

Angara, E. 2017. *Philippines-world's 4th least active in exercising.* Retrieved from:https://news.mb.com.ph/2017/07/22/philippines-worlds-4th-least-active-in-exercising/

Begg, S., Vos, T., Stevenson, B.C., Stanley, L. &. Lopez, A.D. (2007). *The burden of disease and injury in Australia 2003.* PHE 82, Canberra: Australian Institute of Health and Welfare.

Boschmann M, Steiniger J, Hille U, Tank J, Adams F, Sharma AM, Klaus S, Luft FC, Jordan J. (2003). *Water-induced thermogenesis.* Retrieved from: https://www.ncbi.nlm.nih.gov/pubmed/14671205

Cabral, M. (2018). *Health related practices in workplace unpublished manuscript,* Adventist University of the Philippines, Cavite, Philippines.

Coulson J.C., McKenna J., Field M. (2006). Exercising at work and self-reported work performance. *Int J Workplace Health Manag 1,* 176-197.

Daniels, K., Watson, D., & Gedikli, C. (2017). Well-being and the social environment of work: A systematic review of intervention studies. *International Journal of Environmental Research and Public Health, 14*(8), 918. doi:10.3390/ijerph14080918

Leduc C., Houlfort N., & Bourdeau S. (2016). Work-life balance: *The good and the bad of boundary management.* Retrieved from: https://www.researchgate.net/publication/292077832_Work-Life_Balance_The_Good_and_the_Bad_of_Boundary_Management

MacGill, M. 2018. Water: Do we really need 8 glasses a day? Retrieved from: https://www.medicalnewstoday.com/articles/306638

Mailey, E.L., Rosenkranz, S.K., Casey, K., & Swank, K. (2016). Comparing the effects of two different break strategies on occupational sedentary behavior in a real world setting: A randomized trial. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4995540/

Nasab H.S., Ghofranipour F., Kazemnejad A., Khavanin A., & Tavakoli, R. (2009). Evaluation of knowledge, attitude and behavior of workers towards occupational health and safety. Retrieved from https://www.researchgate.net/publication/241221525_Evaluation_of_Knowledge_Attitude_and_Behavior_of_Workers_towards_Occupational_Health_and_Safety

National Hydration Council. (2016). Fact Sheet Final 1: Hydration in Workplace. Retrieved from https://www.naturalhydrationcouncil.org.uk/wp-content/uploads/2016/07/NHC-Hydration- in-Workplace-fact-sheet-FINAL1.pdf

Pandey, A., Salahuddin, U., Garg, S., Ayers, C., Kulinski, J., Anand, V., ... & Berry, J. D. (2016). Continuous dose-response association between sedentary time and risk for cardiovascular disease: a meta-analysis. JAMA cardiology, 1(5), 575-583.

Populyst. (2015). *Working age population around the world 1960-2050.* Retrieved from: https://populyst.net/2015/09/25/working-age-population-around-the-world-1960-2050/

Pfeffer, J. (2018, September). The overlooked essentials of employee well-being. *McKinsey Quarterly.* Retrieved from: https://www.mckinsey.com/business-functions/organization/our-insights/the-overlooked-essentials-of-employee-well-being

Rezende, L.F.M., Sá, T.H., Mielke, G.I., Viscondi, J.Y.K., Rey-López, J.P., & Garcia, L.M.T. (2016). *All-cause mortality attributable to sitting time: Analysis of 54 countries worldwide.* Retrieved from: https://www.ncbi.nlm.nih.gov/pubmed/27017420

Quinn, C. (2016). *Wow, sitting is way worse for you than you thought.* Retrieved from: https://www.thrillist.com/health/nation/why-you-shouldnt-sit-for-more-than-3-hours-a-day

Voss, J. (2011). *Knowledge in the workplace.* Retrieved from: https://media.haworth.com/asset/28550/Knowledge%20in%20the%20Workplace_P2.pdf

Waters, C. N., Ling, E. P., Chu, A. H., Ng, S. H., Chia, A., Lim, Y. W., & Müller-Riemenschneider, F. (2016). Assessing and understanding sedentary behaviour in office-based working adults: a mixed-method approach. BMC public health, 16(1), 360.

World Health Organization (2008). *Move for health.* Retrieved 6 June 2008 from www.who.int/moveforhealth/en/

Yahya. R., Muhamad, R., & Yusoff, H.M. (2012). *Association between knowledge, attitude and practice on cardiovascular disease among women in Kelantan, Malaysia.* Retrieved from: https://www.researchgate.net/publication/287564151_Association_between_Knowledge_Attitude_and_Practice_on_Cardiovascular_Disease_among_Women_in_Kelantan_Malaysia

Contemporary Religious Music as a Supplemental Intervention to Reduce Postoperative Pain

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Abstract

Post-operative pain alone is capable of ranging from moderate to severe in intensity for 80% of the patients undergoing surgical procedures. As a result, methods to alleviate pain have ranged from the traditional medical approach of providing medications to the relatively more recent non-pharmacological methods, such as music therapy. This study utilized a quasi-experimental design aimed to determine the effects of contemporary religious music as an intervention to post-operative pain for patients ranging from 50-60 years old. Thirty respondents are asked to be part of the study, 15 are under experimental and the other half is the control group. Numeric Pain Scale (NPS) is used to measure the level and intensity of Pain before and after the intervention. Both the experimental and control groups are video recorded. Results show that the control group with a standard intervention has the same mean of (7.0) which indicates that the level of pain on the control group has changed at all, while the experimental group has a mean of (5.40) with a p-value of (.000) and t-value of (2.048). In this study, the postoperative pain level in the experimental group decreased significantly after they listened to music. Therefore, contemporary religious music could be used as an effective intervention to lessen pain among post-operative patients.

Keywords: *music therapy; post-operative pain, pain scale*

Pain management is a very important component in the care of all patients undergoing surgery, both pre-operative and post-operative. All types of surgical procedures, either minor or major cause trauma on patients because it involves incision or excision of patients' tissues and closure of the wound/s by sutures or surgical staples. The pain that patients undergo often experience immediately after surgery does not only increased discomfort and anxiety levels but it also stresses the body. Neglecting pain might lead to complications in the long run; therefore, tolerating pain in any number of patients could result in considerable economic losses through additional hospitalization costs as well as lower productivity for the patients at least in the short run. National health organizations throughout the world recognize pain relief as a primordial medical objective – both ethically as well as from a cultural point of view (Zborowski, 1982). National Institute of Health 2007 stated, "Pain affects more Americans than diabetes, heart disease, and cancer combined with chronic pain being the most common cause of long-term disability." As a result, methods to alleviate pain have ranged from the traditional medical approach of providing medications to the relatively more recent non-pharmacological methods, such as music therapy. Musical healing initiatives have gradually become more prevalent as an adjunct to traditional medical practices, spurring interest among researchers attempting to decipher whether music holds any physiological and psychological benefits (Krout, 2007). Chow (2015) proves that music therapy on postoperative pain intensity reduces fatigue, anxiety, and analgesic consumption in gynecological patients during the postoperative period. Adversel, Dunn (2005) concluded that music is not effective

in reducing post-operative pain, because his research methodology proves that though some patients experience increased comfort while listening to music other patients are still irritable. This shows the difference between inconsistent results for the objective measures of the pain and what the patient is reporting. Rozzano (2002) declares that pain is one of the most common complaints among patients that demand nursing attention and immediate actions. One of the many situations where the pain is a major symptom is after surgery. This space then becomes a priority problem for post-operative patients. The nurse's concern should, therefore, be directed towards planning and applying nursing interventions to meet the needs of patients' space and formulating solutions to patients' problems. Music is one of the interventions nurses are using in relieving pain. Alegre (2006) Music is a combination of rhythmical, harmonic, and melodic sounds, and many peoples throughout history, have believed in its medicinal effects. Music therapy is a systematic intervention process in which a therapist helps patients to improve health, utilizing musical experiences and the relationships that develop through them, such as dynamic forces of change. It is a multidisciplinary process in which one uses, basically, music as the primary element of work. In addition to that, Rosales (2013) identifies the effect of soothing music on the perception of pain during the latent phase of labor among laboring women in a government hospital. Locsin (2006) suggests that the use of music as an intervention for relieving pain has increased in recent years, prompting its growing use among the people of the western countries. However, among Asians, music has long been used for this purpose and continues even today. Cybron (2000) adds that nurses use music therapeutically but often assume that all patients will equally appreciate the same type of music. Cultural differences in music preferences are compared across five pain studies. Music preferences for pain relief are described as the most frequently chosen type of music for each culture.

Thus, the study aims to assess the effect of music as a supplemental intervention to reduce postoperative pain on the patients who underwent major surgery. The study will differentiate the effects of groups of patients after major surgery. This study also attempts to determine the patient's physiologic response before and after music therapy among patients who will undergo major surgeries at a certain public hospital in manila. This study will seek to answer the following:

1. What is the level of pain intensity of the control group and the experimental group before and after music therapy?
2. Is there a significant difference in the level of pain intensity (pre and post) of the control group of music therapy?
3. Is there a significant difference in the level of pain intensity (pre and post) of the experimental group of music therapy?
4. Is there a significant difference in the pain scale (pre and post) individually and totally between the control and experimental group?

Review of Literature

Postoperative pain is defined as a condition of tissue injury together with muscle spasm after surgery. Ceyhad (2010) found that unrelieved postoperative pain may have a negative impact on the physiological and psychological well-being of patients. National Institute of Health 2007 provides evidence, "Pain affects more Americans than diabetes, heart disease, and cancer combined with chronic pain being the most common cause of long-term disability. Post-operative pain alone is capable of ranging from moderate to severe in intensity for 80% of the patients undergoing surgical procedures. If inadequately relieved can result in a prolonged healing process and

overall discomfort (Tse, Chan, & Benzie, 2005).” As a result, methods to alleviate pain have ranged from the traditional medical approach of providing medications to the relatively more recent non-pharmacological methods, such as music therapy. Musical healing initiatives have gradually become more prevalent as an adjunct to traditional medical practices, spurring interest among researchers attempting to decipher whether music holds any physiological and psychological benefits (Krout, 2007). Prowse, (2010) conducted a study on factors that can complicate pain management in older people, This study offers new insight for managing acute pain in older people as well. Prowse (2010) proves that managing acute pain well in older adults involves understanding the influence of a series of integrated factors, attitudes and beliefs, physiological aging processes, pharmacological factors, and the social construction of the older person in healthcare contexts. Inadequately treated acute pain can result in significant consequences Moreover; Klimi(2012) also added that music appears to be an effective non-invasive, non-pharmacological, and relatively cheap intervention for postoperative pain management.

Music therapy is defined as skillful use of music to promote, maintain, and restore mental, physical, emotional, and spiritual health (MTAO, 2010) Ajorpaz (2014) According to Hole (2015) music could be offered as a way to help patients reduce pain and anxiety during the postoperative period; moreover, Vaajoki (2011), suggest that music intervention is safe, inexpensive and easily used to improve the healing environment for abdominal surgery patients and that music intervention should be offered as an adjunct alternative to pharmacological pain relief after abdominal surgery in nursing practice. Schneider (2016) conducts a study about “The Effect of Listening to Music on Postoperative Pain in Adult Orthopedic Patients” which serves as a purpose of the study was to determine if listening to music has a positive effect on pain scores and satisfaction in the postoperative adult orthopedic patient. A secondary purpose was to expose nurses on a standard medical-surgical unit to an intervention, supported by the holistic nursing model that they could use in their care. This study is a descriptive, comparative, quasi-experimental design. Patients listened to prerecorded music on individual CD players and recorded pre-post pain scores with the intervention. A satisfactory survey is completed on discharge. The study reveals that there is a significant reduction in patients’ pain scores after listening to music. Patients expressed overall satisfaction and stated that listening to music is beneficial as an adjunct to pain medication and contributes to increased patient satisfaction. it is hoped that the information gained from this study will lead to an enhancement in the standard of care for postoperative patients. Postoperative patients differ in their response to pain. It is therefore important that nurses offer other options other than analgesics. Another study was conducted by Mood (2002) reveals that relaxation and music may reduce pain by interrupting the postoperative cycle of pain, muscle tension, and sympathetic activity. Gaar, Grigorov, Neamtu, Varbanova (2016) have demonstrated that short intraoperative and post-operative exposure to light piano miniature music, was effective in reducing postoperative pain in the first 24hrs in male patients after abdominal surgery. Dagli (2016) agrees that music therapy is given after surgery to help decrease postoperative pain in the first 24 hours and the analgesic consumption during the first four hours. Krout (2007) also recommended that music therapy be performed with an accredited music therapist. Music therapy can be applied as a more receptive and passive exercise, such as through music listening, as well as a more engaging, expressive activity

such as singing or drumming. Depending on the choice of music, music can affect the body in a variety of ways from having a more arousing effect to one that calms. For instance, by interacting with our physiological systems, it can serve as a distraction from pain stimuli, have a sedative effect, and provide relief from undesirable environmental impetuses, such as hospital noise (Krout, 2007; Kwekkeboom, 2003). Musthe (2013) states that the brain processes music and pain along the same neural pathways. Therefore, if the patient activates those pathways with music before surgery or a medical procedure, these neural pathways would be preoccupied at the time of intervention and the patient will not perceive the pain to the same degree as if music is not used. Support for this claim has been found in numerous studies, which explain this phenomenon with the Pain Gate Control Theory.

Amir (2012) indicated the occurrence of spiritual moments in her in depths examination of meaningful moments in music therapy. Moments in spirituality were discovered through the research and were defined as moments in which both clients and therapists felt connected to God, connected to their soul, and added some kind of mystical and sacred experience. In accordance with Karteraki, Melidoniotis, Panyiota, Sfakianakis, (2017) they studied the effect of music therapy as a non-pharmaceutical intervention and its potential result to post-operative pain relief. Regarding the method of intervention and the kind of music selection, several studies agree that passive music listening via headphones is the better way of intervention. Nurses can use this method in daily clinical practice in obese patients, which they should obtain to early ambulation and quick respiratory system recovery. Bonny (2001) authored an article highlighting the role of music and spirituality in music therapy. Bony views the relationship between spirituality and the therapeutic process as a way of guiding the client in discovering his or her unconscious pattern and understanding those patterns. Bonny encourages music therapists to address spiritual aspects in their work as well as explore their spirituality. Wlordarezyk (2007) investigates the effect of music therapy on patients' spiritual wellbeing, finds that the music therapy setting facilitated more discussion of spirituality related topics than the non-music session.

Methodology

Research Design

To determine the effect of music on post-op pain response, before and after music therapy, a quasi-experimental design was used. The dependent variable is pain. The independent variable is music therapy. The experimental group undergoes music therapy after the surgery while the controlled group does not undergo music therapy after the surgery.

Population and Sampling

This study is conducted in one of the government tertiary hospitals in metro manila, there are 30 major gastrointestinal surgeries, mostly, and patients with gastrointestinal or abdominal surgeries experience major discomfort and side effects. These surgeries are one of the most common in number, and long term healing needs a lot of interventions to manage its pain. Following the said procedure post-operative patients are transferred in the ward after the post-anesthesia care unit. The study is conducted on male patients only, aged 50-60 years, they are divided into two groups the controlled and uncontrolled group, and are given the numeric pain scale style to choose the range after listening to music for an hour. The respondents are male patients aged 50-60 years of age who undergo major Gastro-

Intestinal surgery and are transferred to the surgical ward from the Post Anesthesia Care Unit (PACU).

Table 1
Distribution of Respondents

Experimental		Control	
Frequency	%	Frequency	%
15	50%		50%

Instrumentation

The pain response of the postoperative major surgery is measured using the Numeric Pain Rating Scale Style. This scale is composed of a range of numbers from 0-10. No pain, Mild Pain, Moderate Pain, Miserable, Worst Pain (Franklin, 2011). The researchers measure the physiologic pain responses of the 30 postoperative major surgeries in terms of Pain Scale, with the use of the speaker. An iPhone 7 is used to video and record all the procedures done.

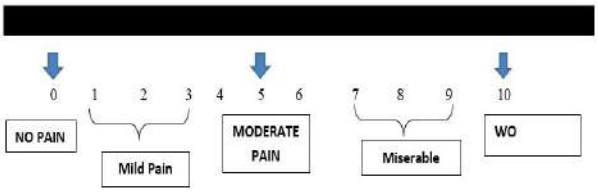

Figure 1. Numeric Pain Rating Scale

Procedure

Control Group. The researchers went to the Nursing Service Office (NSO) to submit consent latter. After a few days, the letter is approved. On the day of our research experiment, the researchers went back to NSO asked permission from administrators then went to the male ward and presented a letter of authorization to the head nurses. The researchers explained the procedure of the research experiment and asked about how many patients underwent major surgery, what type of major surgery, and how many beds are in a ward. Then, the researchers went to the specific ward, greeted the patients, and then introduced ourselves & what school we came from, then explained that we're going to conduct research experiment entitled "Supplemental Intervention to reduce post-operative pain" Furthermore, the researchers assured that the data collected will remain confidential. After experimenting, the researchers gave a token of appreciation and reminded them that the data collected will remain confidential.

Experiemental Group. The researchers went to Nursing Service Office (NSO) and gave a letter of consent of our study and after few days we went back & they granted the letter, on the day of our research experiment, the researchers went back to NSO and asked for permission from the administrators, we then went to the male ward and presented a letter of authorization. The researchers explained the procedure of the research experiment and asked about how many patients who underwent major surgery, what type of major surgery, and how many are beds are there in the researchers went to the specific ward and explained research experiment entitled "Supplemental Intervention to reduce post-operative pain" after the speaker and the music are ready. The researchers explained that music will play for one hour. The respondents will just listen to the music, assured that the data collected will remain confidential, and started the experiment. The initial pain scale is collected before the music plays but after an hour the latest pain scale is collected after listening to music after experimenting, the researchers gave a token of appreciation and reminded that the collected data will remain confidential.

Procedure for Measuring Physiologic Response to Pain

With the speaker played to the surgical

ward for an hour pain scale was taken and recorded. After an hour the patients showed alleviation of pain. After that, the researchers asked the patients verbally about how they feel and the intensity.

Results and Discussion

Level of pain intensity (pre and post) of the control group and experimental group

To measure the level of pain in both experimental and control groups, the Numeric Pain Rating Scale style is utilized. Pain assessment is given a descriptor as a reference for scoring. Pain Scale has a scoring of zero to ten. Pain is an unpleasant sensation that can range from mild, localized discomfort to agony. Pain has both physical and emotional components. The physical part of pain results from nerve stimulation. Pain is mediated by specific nerve fibers that carry the pain impulses to the brain where their conscious appreciation may be modified by many factors. Duarte (2016) defines acute pain as temporarily related to injury and that resolves during the appropriate healing period. It often responds to treatment with analgesic medications and treatment of the precipitating cause.

Table 3 shows that the level of pain on the control group before the Music therapy has a mean of (7.00) and still the same after the intervention. Whereas, the Experimental group has a mean of (7.07) a lower result than the control group with a mean of (3.73). The results of the respondents of the experimental group have shown that the level of pain is reduced after listening to contemporary music.

Table 3
Mean pain scale before and after music therapy of the control and experimental group

	Before Music Therapy	After Music Therapy
Control Group	7.00	7.00
Experimental Group	7.07	3.73

A patient's postoperative pain can be a result of the operation, complications related to the surgery, drains coming from the area of the surgery, existing illnesses, or procedures related to the symptoms (Pyati&Gan 2007; Ashburn et al. 2004). Studies have demonstrated that listening to music; especially one's favorite music activates the brains and releases dopamine pleasure hormones in the brain (Salimpoor et al. 2011; Baumgartner et al. 2006). Listening to music postoperatively has had a positive effect on patients' experiences of the treatment they receive (Easter et al. 2010; Locsin & McCaffrey 2010). It has helped patients relax and direct their thoughts away from pain, fear, and anxiety (Voss et al. 20139; Brunges & Avigne 2013; Mok & Wong 2013). Research patients who listened to music are comforted in an unpleasant situation and music felt familiar in an unfamiliar setting (Mok& Wong 2013).

Difference in the Pain Scale before and After Music Therapy of the Control Group

Table 4 shows that before music therapy the mean is (7.00) and p-value of (1.000) and t-value of (2.048). After the music therapy, the mean value is (7.00) and p-value of (1.000) and t-value of (2.048). Therefore the hypothesis is accepted however, it is not significant.

Table 4
Difference in the Pain Scale Before and After Music Therapy of the Control Group

	M	***p***	***t***	**VI**
Before Music Therapy	7.00	1.000	2.048	Not Significant
After Music Therapy	7.00			

According to Kwon, Kim, and Park (2006) revealed that music therapy affects pain, discomfort, and depression for patients with a leg fracture. Results also revealed that music therapy is effective in pain, systolic blood pressure, diastolic blood pressure, pulse rate, respiratory rate, and a lower degree of discomfort. No change was found in the control group. Cepeda (2006) studied the effect of music on post-surgery pain. Patients in the experimental group listened to pre-recorded music and the control group received routine care. Results found that patients who listened to music reported less pain than other patients who are not exposed to it. Vaajoki (2011) evaluates the effect of music listening on blood pressure, heart rate, and respiratory rate on operation day and on the first, second, and third postoperative days in abdominal surgery patients. Vaajoki concluded that the respiratory rate and systolic blood pressure were significantly lower after music intervention on both the first and second postoperative days compared with the control group.

Difference in the Pain Scale before and After Music Therapy of the Experimental Group

Table 5 shows that experimental group before music therapy has a mean of (7.07) then after the intervention is done, (post-intervention) patient showed alleviation of pain with a mean of (3.73) with a p-value of 0.000 and t-value of (2.048), therefore, the hypothesis that the is no significant difference is rejected because contemporary religious music is an effective supplementary intervention and it has a significant difference.

Table 5
Difference in the Pain Scale Before and After Music Therapy of the Experimental Group

	M	*p*	*t*	VI
Before Music Therapy	7.07	0.000	2.048	Significant
After Music Therapy	3.73			

The results agree with Petrini (2015) in which the experimental group received standard care and 30-min soft music intervention for 3 days, while the control group received only standard care. Measures include pain, anxiety, vital signs (blood pressure, heart rate, and respiratory rate), patient-controlled analgesia, and diclofenac sodium suppository use then after that experimental group showed statistically significant decrease in pain, anxiety, systolic blood pressure and heart rate over time compared to the control group, but no significant difference was identified in diastolic blood pressure, respiratory rate and patient-controlled analgesia. Postoperative pain is an uncomfortable situation in the critical period of surgical recovery. Often, pain may increase stress response, abnormal vital signs, and sleep disorders, or maybe act as an appetite suppressant. Music therapy is described as non - pharmaceutical intervention to accomplish individualized patients' goals for hospital treatment. Also, this result agrees with the study of Sfakianakis (2018) that music intervention can help patients reduce the use of analgesics after the surgery as well as regulating vital signs such as the heart rate and respiratory rate, Pain Scale was also reduced. Moreover, According to integrative medicine insights (2017) music is an integrative complementary modality that could provide a safe and simple intervention to critical care patients. In this study, some patients enjoyed the music and felt it was able to assist them with remaining calm and comfortable after their surgery.

Difference in the pain scale before music therapy between the control and experimental group

Table 6 shows that the level of pain between control group with a mean of (7.00) while on the other hand the experimental group with a mean of (7.07) before music therapy has a p-value of (.842) and has a t-value of (2.048), therefore the hypothesis is accepted but not significant.

Table 6
Difference in the Pain Scale before Music Therapy between the Control and Experimental Group

Before Music Therapy	M	*p*	*t*	VI
Control Group	7.00	0.842	2.048	Not Significant
Experimental Group	7.07			

Corke (2013) agrees that the amount of pain a patient suffers after surgery is related to the extent of tissue damage and the site of surgery. Operations on the thorax and upper abdomen are more painful than procedures on the lower abdomen which in turn are more painful than operations on limbs.1Joint replacement is associated with severe postoperative pain. Pain has both sensory and emotional components that interact to produce an overall 'pain experience'. Unrelieved pain after surgery can interfere with sleep and physical functioning and can negatively affect a patient's well-being on multiple levels.

Difference in Pain Scale after Music Therapy between Control and Experimental Group

Table 7 shows that the control group with a standard intervention has the same mean of (7.0) while the experimental group has shown an alleviation of pain with a result of (3.73) from (7.0) which implies that music therapy has a significant difference, and it can reduce the pain postoperatively, and the hypothesis that there is no significant difference is rejected.

Table 7
Difference in the Pain Scale after Music Therapy between the Control and Experimental Group

Before Music Therapy	M	*p*	*t*	VI
Control Group	7.00	0.000	2.048	Significant
Experimental Group	3.73			

Mauree (2010) points out that postoperative patients who received music therapy had 50% reduction in pain intensity and needed less analgesia than patients who didn't receive music therapy she also added in her study that music therapy may be an acceptable, safe, inexpensive and alternative to pharmacologic pain relief for postoperative patients and those undergoing painful procedures. Patients exposed to music reported 57% to 72% less pain intensity, distress, and anxiety than the control patients. In another study by Dileo (2009) on patients undergoing open coronary artery bypass grafting or aortic valve replacement surgery, patients who listened to soothing music had higher oxytocin and PaO2 levels and higher subjective relaxation scores during bed rest, compared to the control group (whose oxytocin levels decreased). The music therapy patients also experienced reductions over time in respiratory rate and mean arterial pressure. These results demonstrate that music therapy can increase relaxation through psychological effects, as well as increasing oxytocin release. Oxytocin, which is synthesized in the hypothalamus, is released in response to stress and creates a sense of calmness, diminishes the sensation of pain, and promotes wound healing. Low levels of oxytocin have been associated with pain and anxiousness.

Difference in the Mean Pain Scale between the control and experimental group

Table 8 shows the control group with a mean of (7.0) whiles the experimental group has a mean of (5.40) with a p-value of (.000) and a t-value of (2.048). In this study, the postoperative pain level in the experimental group decreased significantly after they listened to music which means that the hypothesis that there is no significant difference is rejected.

Table 8
Difference in the Mean Pain Scale between the control and experimental group

Mean Pain Scale	M	*p*	*t*	VI
Control Group	7.00	0.000	2.048	Significant
Experimental Group	5.40			

Referring to music therapy, Livingston (2010) highlights the importance of a distracter for patients undergoing surgery; this distracter provides an escape through imaginative thought which is important in relieving stress, anxiety, and fear associated with pain. Melzack & Walls (2009) suggest that pleasant imagery increases a sense of control, thereby decreasing anxiety and feelings of helplessness. Music can be a strategy for refocusing attention using a painful experience and by acting as a competing stimulus to pain or distracter; it can reduce the perceived intensity of pain. Gfeller (2013) Attests that music may also be effective on a physiological level as well. Music with a slow, steady tempo can be used to cue slower breathing and trigger a relaxation response. This training is called the entrainment principle. According to Bradt (2002), this principle involves bodies that are vibrating in slightly different ways that eventually catch up with each other to vibrate simultaneously. Bradt (2002) have shown that music therapists entrain a client's heart rate (or respiration) by first matching the music to the heartbeat, then slightly altering the music tempo so that the heart rate follows the beat of the music. The type of music used can entrain the body to respond in different ways. Sedative music can alleviate anxiety and stress levels resulting in less use of pain medication, shorter recovery periods, and higher patient satisfaction.

Conclusions and Recommendations

Post-operative male patients (50-60) years of age under the control group with no music therapy after post-op pain has no changes at all while using contemporary religious music was effective to the experimental group. Therefore, contemporary religious music could be used as an effective supplemental intervention to lessen the pain among post-operative patients. Currently, there is a lot of Analgesias available in the pharmacy, however, the researchers wish to recommend nursing practitioners and administrators on using contemporary religious songs as music therapy in reducing pain; it is inexpensive with no side effects and safe rather than increasing relievers. The researchers strongly recommend that music therapy using contemporary religious music should be introduced in healthcare facilities as a comfort measure for patients in post-operative pain. In a further study, researchers recommend that future researchers should opt to a greater number of respondents while adding more variables rather than age only and explore more different types of music to increase the knowledge about music therapy and its benefits to patients as well as the community.

References

Ajorpaz, N. Mohammadi, A., Najaran, H., Khazaei, S., (2014). *Effects of Music on Postoperative Pain in Patients Under Open Heart Surgery.* https://www.researchgate.net/publication/272519198_Effect_of_Music_on_Postoperative_Pain_in_Patients_Under_Open_Heart_Surgery. DOI: 10.17795/nmsjournal20213.

Dunn, K. (2004). *Music and the Reduction of Post-Operative Pain to the newborn,* https://www.ncbi.nlm.nih.gov/pubmed/15176110.DOI:10.7748/ns2004.05.18.36.33.c3612

Good, M. (1996). *The Effects of Relaxation and Music on Postoperative Pain:* AReview.http://onlinelibrary.wiley.com/doi/10.1111/j.13652648.1996.tb02925.x/abstract.DOI: 10.1111/j.1365-2648.1996.tb02925.x

Good, M., Picot, B., Salem, S., Chin, C., Picot, S., Lane D. (2000). *Cultural Differences in Music Chosen for Relief Pain.* https://www.ncbi.nlm.nih.gov/pubmed/11847812. DOI:10.1177/089801010001800306

Hatem, T., Lira, P., Mattos, S. (2006). *The Therapeutic Effects Of Music in Children with Cardiac Surgery.* https://www.ncbi.nlm.nih.gov/pubmed/16680285.DOI:10.2223/JPED.147

Hole, J. Hirsch, M. Ball, E. (2015). *Music as an Aid for Postoperative Recovery in Adults: a systematic review and Meta-analysis.* http://thelancet.com/journals/lancet/article/PIIS0140-6736(15)60169-6/abstract. DOI:10.1016/S0140-6736(15)60169-6.

Kozier, B. ERB, G., Berman, B, & Snyder, S. (2004) *Fundamentals of Nursing concepts, process, and practice 7th edition.* Philippines: person education south Asia PTE LTD.

Labrague, L., Rosales, R., Rosales, G., Fiel, G., (2013). *The Effects of Soothing Music on Labor Pain Among Filipino Mothers.* https://www.researchgate.net/publication/235999722_Effects_of_soothing_music_on_labor_pain_among_Filipino_mothers. DOI:10.5430/cns.v1n1p35

Lim, P., Locsin, R. (2006) *Music as Nursing Intervention for Pain in Five Asian Countries.* https://www.ncbi.nlm.nih.gov/pubmed/16879181.DOI:10.1111/j.1466-7657.2006.00480.x

Locsin, R. (1981). *The Effects of Music in Pain of Selected Post-Operative Patients.*https://www.ncbi.nlm.nih.gov/pubmed/6908593.

Polit, D., & Beck, C.(2008) *Nursing Research: Generating and Assessing Evidence for Nursing Practice 8TH Edition.* United States: Lippincott Williams &Wilkins

Schneider, M. (2016). *The Effect of Listening to Music on Postoperative Pain in Adult/ Orthopedic/Patient.* http://journals.sagepub.com/doi/abs/10.1177/0898010116677383

Smeltzer, S. Bare, B., Hinkle, J., & Cheever, K. (2013) *Brunner & Suddarth's Textbook of Medical Surgical Nursing 13th Edition*. Philippines; Lippincott Williams & Wilkins

Tse, M., Chan, M., Benzie, I. (2005) *The Effect of Music Therapy on Post Operative Pain, HeartPressure, and Analgesic use Following Nasal Surgery.* http://www.tandfonline.com/ doi/abs/10.1080/J354v19n03_05.DOI:10.1080/J354v19n03_05.

Vaajoki, A., Pietilä, AM., Kankkunen, P., Vehviläinen-Julkunen, K. (2011). *Effects of Listening to Music on Pain Intensity and Pain Distress g.* After Surgery: Intervention. https://www. ncbi.nlm.nih.gov/pubmed/21843204. DOI:10.1111/j.1365-2702.2011.03829.x.

Wood, M., Clark, M., Wilkie, E., & Szivas, E. (2002) *Researching and writing Dissertations in Business Management*, London: Thomson learning,

Gaming Addiction and Depression among Students Ages 15-19 Years Old in Cavite, Philippines

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Abstract

Gaming, in many ways and forms, has turned from an entertainment to addiction, especially among the younger generation. Excessive gaming, pathological gaming and gaming addiction are having negative impact on the gamers and are also related to depression. This study focused on determining the relationship between gaming addiction and depression among 15 to 29 years old, identifying the differences between male and female toward gaming addiction and depression, and examining if gaming addiction characteristics predict depression. The data collection of the study was through a voluntary, self-reporting questionnaire survey distributed and collected by the researchers among 88 students. The questionnaire applied Likert scale as measurement for the analysis of the three variables through correlation and regression analysis. 10.7% found to be severely addicted to gaming while 44% are moderate. Whereas 25% are severely depressed while 7.1% are depressed moderately. With a confidence level of 95%, gaming addiction is analyzed to be positively correlated with depression significantly. Among the respondents, male has a higher prevalence of gaming addiction than female yet no significant difference in level of depression. However, female gaming addicts showed higher depression than addicted male. Lastly, mood modification (reality-live escape) is the only gaming addiction characteristic that predicts depression. It is recommended to further study on the early exposure of gaming behavior to prevent depression and other mental health conditions as gaming addiction has been found to relate to anxiety, depression and psychological distress.

Keywords: *gaming addiction, internet gaming disorder, depression, mood modification, escape.*

Pain management is a very important componGaming addiction has become one of the public health concerns in this modern era. Youngsters, children, and even toddlers are greatly exposed to video games. Video games were easily obtained and only a touch away with the smartphone in hand, laptop on desk, to the high-tech 3D gaming devices bringing games into a real-life experience. Video gaming was commonly treated as an entertainment; however, excessive gaming may lead to health problems.

Recently, the World Health Organization (WHO, 2018) included Gaming Disorder or GD (previously called Internet Gaming Disorder or IGD) in the International Classification of Diseases under Mental Health. WHO (2018) defined GD as a pattern of gaming behavior (digital or video) described by uncontrollable gaming, preference to gaming over other daily activities, and persistent gaming regardless of the problems. The inclusion was based on the reviews of the available evidences and consensus done by different organizations and geographical regions (WHO, 2018).

According to WePC (2018), there were more than 2.5 billion gamers from all over the world of which 912 million were from Asia Pacific Region. The prevalence of gaming among youth in East and South-East Asian countries was 10%-15% while Europe and

North America was 1%-5% (Saunders, et al., 2017). The global gamers were accounted up to 57% between the ages 10-35 years, with more than half of them are men (Filmora, 2018). China ranked number one for having the largest number of gamers in the world amounting to 619.5 million with the majority using mobile phones (Newzoo, 2018). South China Morning Post (2018) reported that the government is tightening its regulation over the mobile industry. In the Philippines, there were 29.9 million gamers (Newzoo, 2017) of which 42% were male between the ages 10-35 years (Statista, 2018). The number of gamers worldwide was estimated to rise to 2.7 billion by 2021 (Statista, 2018). The global and local statistics suggested that the number of gamers increases each year. Thus, another reason for inclusion was the concern that countries face when formulating public health approaches to the increasing trend (WHO, 2018).

Brunborg, Mentzoni, and Froyland, (2014) stated that there are several studies that show many problems correlated with video games. Archer (2018) listed the connections of many mental health conditions diagnosed with gaming addiction including emotional, cognitive, motivational and somatic disruptions expression in anhedonia, anxiety, sleep disturbance and depression, psychological distress, lower levels of psychological resilience and symptoms of attention-deficit hyperactivity disorder.

According to WHO (2018), depression was an illness affecting 300 million people worldwide that can lead to suicide which was the second leading cause of death between the ages 15-29 years. Several news had been reported online and on television regarding suicides related to gaming (e.g. CBS NEWS, 2017; Dallas Behavioral Healthcare Hospital, 2017; UNILAD). In Korea, gaming had comorbidity to neuropsychiatric conditions and suicidal tendencies (Archer and Wentz, 2017). Korea SBS News (2004) in Saunder's et, al (2017) reported the world first death due to gaming disorder.

King and Delfabbro (2014) stated that in 2013, American Psychiatric Association included IDG in the Diagnostic and Statistical Manual of Mental Disorder, 5th edition in 2013 as a disorder and called for further study. Early reports of gaming addiction started to appear in academic literature back in the 1980's (Kowert & Quandt, 2015) when videogames started to became popular (Haagsma, 2008). Since then, gaming has become an accessible relaxation activity with the gamers spending 12% as reported by The Nielsen Company (2014) in Kuss, Griffith, and Pontes (2016). It was more time than they did in 2012 as it uses diverse platforms including personal computers, consoles and mobile devices such as laptops, tablets and smartphone (Kuss, Griffith, and Pontes, 2016). It means gaming can be done anytime and anywhere. Burleigh et al. (2017) stated that as technology developed, the association between gaming and depression has developed too. This projection suggests that if technology continues to develop and the number of gamers remains rising, the number of depression may also rise.

Therefore, this study investigated the relationship of gaming addiction and depression among gamer students and to determine whether the gaming addiction characteristics are predictors of depression. The differences of gaming addiction and depression severity between sexes were also investigated to all participants, as well as among only the gaming addicts.

Methodology

Utilizing purposive sampling, this study surveyed 88 individuals aged 15 to 29 years. Respondents comprise of 37 from a Univeristy in Cavite, Philippines, 47 from two gaming centers around the univeristy. Four questionnaires were excluded; two due

to younger age than 15, one with missing demographic and one with no gaming behavior.

Instrumentation

Paper questionnaires were used for the survey composing 3 main sections: (1) Demographics: age, sex and educational level (either high school or collect); (2) gaming addiction scale (GAS); and (3) depression severity scale.

The gaming addiction scale is adopted from Lemmens, Valkenburg & Peter (2009). Seven questions were selected out of the given 21 in a 7-item scale (3 questions each). The 7-item assess seven characteristics of gaming addiction including. The respondents are to select whether they never, rarely, sometimes, often or always felt as the question salience (or preoccupation), tolerance, mood modification (or reality-life escape), relapse (or unsuccessful attempts to reduce or stop gaming), withdrawal, conflict and problems described in the past six months.

There are four categories for addiction: Severe, moderate, mild and no addiction. Those who scored "sometimes" or more on all seven items were defined as severely addicted, and those who scored "sometimes" or more on four to six items were defined as moderate, and the rest as no addiction.

The depression severity scale is adopted from the Major Depression Inventory (MDI) developed to cover depressive symptoms in Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5). Bech, Timmerby, Lunde and Soendergaard (2015) studied MDI and found it to be acceptable to be used for depression assessment. MDI compose of 10 items, 12 questions in total; question one to seven, 8a and 8b, nine, and 10a and 10b. In this study, we modified question nine from a single question to 9a and 9b as shown in the appendix. Six options are included for selection according to Likert scale from "0: at no time", "1: some of the time", "2: slightly less than half the time", 3: slightly more than half the time", 4: most of the time", and "5: all the time" as the most severe option for the depressive descriptions.

For the scoring method, the ten items (questions 1 – 10) are summed up to give a total score for depression severity. For items 8a versus 8b, 9a versus 9b, and 10a versus 10b, it is the highest score on a or b that is used. A scoring range of 31 – 50 indicates of severe depression; follow by moderate depression (26 – 30), mild depression (21-25), and on or doubtful depression (0 – 20).

Data Analysis

Data collection was carried out in the first and second week of November 2018 at the mentioned locations. Statistical analysis was performed using IBM Statistical Package for Social Science 25 (IBM SPSS-25). Independent t-tests were conducted to examine if male and female have a significant different in the level of gaming addiction and depression severity among all the participants and another t-test to find out if there is a significant difference between sex (male and female) and depression among the gaming addicts only. Pearson's correlation analysis was conducted to examine the relationship between gaming addiction and depression. Multiple regression analysis was used to determine the gaming characteristics as predictors of depression. The seven characteristics of gaming addiction were set as the independent variables and depression as dependent variable to determine if the characteristics predict depression.

Results and Discussion

From the analysis, clear results were obtained to answer the five research questions. The questions are shown as relevant to the

study and produced sound results to either accept or reject the hypothesis.

Population and Sampling Techniques

There were a total of 88 voluntarily respondents. 37 respondents were surveyed within the Adventist University of the Philippines, 51 respondents from two gaming centers. Four were excluded due to either having incomplete data or identified as none-gamer. More than half of the respondents aged 20 and below as shown in Figure 1. 54.8% of the respondents were female and 66.3% of them were college students. Table 1 summarized the demographics on sex and educational level.

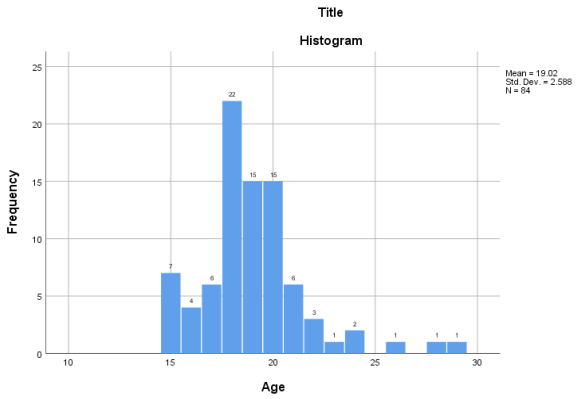

Figure 1. Age of the Respondents

Table 1
Sex and Educational Level of the Respondents

	Frequency	Valid Percentage
Sex		
Male	38	45.2%
Female	46	54.8%
Educational Level		
High School	28	33.7%
College	55	66.3%

Out of the 84 respondents, 9 were severely addicted to gaming (10.7%) and 37 (44%) were moderately addicted to gaming, as shown in Table 2. The result suggested that one in ten gamers in Cavite has addicted to gaming while half of the gamers are addicted. In term of depression, 25% were diagnosed as severely depressed while 34.5% had no depression. Majority of the respondents were found to be in these two groups as shown in Table 3.

Table 2
Gaming Addiction tendencies of the Respondents

	Frequency	Percentage
No or doubtful	38	45.2
Moderate	37	44.0
Severe	9	10.7
Total	84	100.0

Table 3
Extent of the Depression of the Respondents

	Frequency	Percentage
No	29	34.5
Very Mild	16	19.0
Mild	12	14.3
Moderate	6	7.1
Severe	21	25.0
Total	84	100.0

Relationship between Gaming Addiction and Depression

`The research hypothesis one stated that there is no significant relationship between the level of gaming addiction and depression severity. However, according to the output of Pearson's correlation analysis, the level of gaming addiction (1.57 ± 0.796) has a positive correlation with depression severity (1.69 ± 1.606, $p < 0.05$). The r value equaled to 0.234 showing a weak correlation between gaming addiction and depression. Nevertheless, the result is clear enough to reject the hypothesis that there is no significant relationship between

the level of gaming addiction and depression severity.

Gaming Addiction between Male and Female

Gaming addiction was hypothesized as having no significant difference between male and female. Independent t-test analysis was conducted in order to measure the difference in gaming addiction between male and female. According to the result of the analysis, male has a mean of 0.87 (± 0.623) in the level of gaming addiction while female has a mean of 0.48 (± 0.658). The p value 0.007 signified that the difference between male and female is significant. The null hypothesis which stated that there is no significant difference in gaming addiction between male and female was rejected.

Depression Severity between Male and Female

Aside from the first t-test for gaming addiction, second and third tests were conducted to investigate the third and fourth research question on whether there is a significant difference in depression severity between male and female among all the respondents, and if there is a significant difference in depression severity between those male and female that are addicted to gaming. Among all the respondents, male has a mean of 1.32 (± 1.526) and female has a mean of 2.00 (± 1.619). Using independent t-test, this difference of 0.68 was not significant (t = -1.978, p = 0.051). Based on the results of this study, the null hypothesis that stated that there is no significant difference in depression severity between male and female is not rejected. Among the male and female gaming addicts, according to the t-test outcome, the difference in depression severity between male and female gaming addicts is significant (t = -2.340, p = 0.024). Male addicts (1.57 ± 1.55) have lower depression severity than female addicts (2.61 ± 1.335). Base on this result, it is safe to reject the null hypothesis that among the gaming addicts, there is a significant difference in depression severity between male and female. Table 4 and 5 summarized all the t-test analysis results.

Table 4

Independent t-test between sex and depression

	Male (N=38)	Female (N=46)	t	p	VI
Gaming Addiction	0.87 ± 0.623	0.48 ± 0.658	2.771	0.007	Significant
Depression	1.32 ± 1.526	2.00 ± 1.619	-1.978	.051	

***: p < 0.001*

Table 5

Independent t-test between sex and depression among the respondents

	Male (N=38)	Female (N=46)	t	p	VI
Gaming Addiction	0.87 ± 0.623	0.48 ± 0.658	2.771	0.007	Significant
Depression	1.32 ± 1.526	2.00 ± 1.619	-1.978	.051	

***: p < 0.001*

Characteristics of Gaming Addiction as predictors of depression

Regarding the gaming addiction characteristics as predictors of depression, null hypothesis stated that the characteristics are not predictors of depression. To test it, a multiple regression analysis was conducted to test if salience (preoccupation), tolerance, mood modification (reality-life escape), relapse (unsuccessful attempts to reduce or stop gaming), withdrawal, conflicts and problem are the predictors of depression. According to the outcome, only mood-modification ($\beta = 0.457$, $p < 0.05$) significantly predicts depression. None of the others significantly predict depression as the p values are shown

in Table 6. It is therefore safe to reject the null hypothesis that none of the gaming addiction characteristics are predictors of depression.

Table 6
Multiple linear regression model for prediction of depression

	β	t	Sig
Salience (Preoccupation)	-.090	-.425	.672
Tolerance	-.278	-1.358	.179
Mood Modification (Reality-Life Escape)	.457	2.473	.016*
Relapse (Unsuccessful attempts to reduce or stop gaming)	.106	.497	.621
Withdrawal	.033	.150	.881
Conflict	.064	.282	.778
Problems	.188	1.054	.295

Multiple linear regression model: F = 2.551, R2 = 0.190, Adjusted R2 = 0.116, p < 0.05;
Dependent variable: Depression;
Predictors: Salience (Preoccupation), Tolerance, Mood Modification (Reality-Life Escape), Relapse (Unsuccessful attempts to reduce or stop gaming), Withdrawal, Conflict, Problems;
**: p < 0.05.*

The result suggested that if there is a high level, or severe gaming addiction, the individual will also has a relatively high depression severity. In another word, the more a person games, the more severely depressed a person will be. Even though it is not a strong correlation between gaming addiction and depression, but the effect of depression experienced by the individual may be severe. According to the results from this study, it is safe to claim that male has a significantly higher prevalence of gaming addiction than female yet female has a significant higher depression than male among the gaming addicts. (Griffiths & Hunt, 1998) found that male has significant higher gaming behaviors than female (Desai, Sarin, Cavallo & Ptenza, 2010) starting at an earlier age. Even though male has always been found to have higher gaming addiction, but Kuss & Griffiths (2012) also found that female gender as well predicted gaming addiction.

Results also showed that male is more addicted to gaming than female yet show no difference in depression. This also means that even though female may be less addicted to gaming, yet female is not less depressed than male. There are surely other contributing factors that lead to depression than gaming. However, addicted female shows a higher depression severity than addicted male according to the result given from t-test. This indicated that even though male and female are both addicted to gaming, female will tend to be more depressed than male.

Alongside with many other studies, the result presented a negative impact of gaming to mental health. In the study of Brunborg, Mentzoni & Froyland (2014), video game addiction is not only increase depression severity, but also decrease academic achievement and causing more conduct problems. Aside from that, it is confirmed that online gamers are align with the anecdotal stereotype as being “competitive, addicted, loners, obsessive, socially inept, isolated, immature and young” (Kowert & Oldmeadow, 2012).

From this study, mood modification is found to be a significant predictor of depression among the seven characteristics of gaming addiction. This suggested that this characteristic presence in a gaming addict, the person may be assumed to be depressed as well. The rationale is that to escape from reality, may be due to depression, gaming world provided another new identity and environment for a better live. The temporary excitement and new identity in the gaming world is preferred than the negative mood in daily live. Haagsma (2008) found that gaming addicts not only played games to escape reality, but they also had less control over their own gaming behavior. As elaborated by Burleigh

et. al. (2017), behavioral addictions such as gambling also used as activity to escape and modify negative mood states which gaming contributes in the same manner. Depression has been found to be consistently associated with increased risk of developing additive behaviors including substance and alcohol abuse (Swendsen & Merikangas, 2000).Grooten & Kowert (2015) stated that gamers are not only individuals who play video games, but it refers to a "multi-faceted social identity that spans personal, social, and virtual contexts" which the world of gaming has become their "reality live". This may seems to be another level of escape from the reality.

Conclusion and Recommendation

Gaming addictions have been found to be consistently associated with depression as supported by many other studies; Filipino adolescents and young adults are not excluded. The negative impact of gaming addiction toward mental health significantly increases depression severity. Depression cases associating with gaming addiction affected female much more than male. In conclusion, adolescent should be monitored or advised of their gaming behaviors before any appearance of complication. The prediction of depression by gaming addiction characteristic may be early prevented.

It is recommended to improve the number of participants in the Philippines for a more contextualized understanding and thus be able to contribute a broad-spectrum of understanding to the related field of study. Further study is also recommended to investigate the early exposures of gaming among both male and female. Reality escape or other possible characteristics could be led by certain factors that initial or motivate gaming that could cause depression.

References

Aarseth, E., Bean, A. M., Boonen, H., Carras, M. C., Coulson, M., Das, D., Deleuze, J., Dunkels, E., Edman, J., Ferguson, C. J., Haagsma, M. H., Bergmark, K. H., Hussain, Z., Jansz, J., Kardefelt-Winther, D., Kutner, L., Markey, P., Nielsen, R. L., Prause, N., Przybylski, A., Quandt, T., Schimmenti, A., Starcevic, V., Stutman, G., Looy J. V., and VAN ROOIJ, A. J. (2017). Scholars' open debate paper on the World Health Organization ICD-11 Gaming Disorder proposal. *Journal of Behavioral Addictions 6*(3), pp. 267–270 (2017) DOI: 10.1556/2006.5.2016.088

Ahmadi J, Amiri A, Ghanizadeh A, Khademalhosseini M, Khademalhosseini Z, Gholami Z, et al. Prevalence of addiction to the internet, computer games, DVD and video and its relationship to anxiety and depression in a sample of Iranian high school students. Iran J Psychiatry Behav Sci 2014; 8(2): 75-80.

Archer, T. (2018) Internet Gaming Disorder Co-morbidity Linked to Depression and Other Affective Problems. Clin Depress 4: e107. doi:10.4172/2572-0791.1000e107

Archer T, Wentz K (2017) Internet-video Gaming: Symptoms, Epidemiology, Neurophysiology and Interventional Aspects. J Child Adolesc Behav 5: 345. doi:10.4172/2375-4494.1000345

Bahrainian, SA., Alizadeh, K. H., Raeisoon, MR., Gorji, O. H., Khazaee, A. (2014). Relationship of Internet addiction with self-esteem and depression in university students. J prev med hyg 2014; 55: 86-89

Bech, P., Timmerby, N., Lunde, M., & Soendergaard, S. (2015). Psychometric evaluation of the major depression inventory (mdi) as depression severity scale using the lead (longitudinal expert assessment of all data) as index of validity. BioMed Central Psychiatry, 15:190. doi: 10.1186/s12888-015-0529-3

Brunborg, G. S., Mentzoni, R. U., and Froyland, L. R. (2014). Is video gaming, or video game addiction, associated with depression, academic achievement, heavy episodic drinking, or conduct problems? Journal of Behavioral Addictions 3(1), pp. 27–32 (2014) DOI: 10.1556/JBA.3.2014.002

Burleigh, T. L., Stavropoulos, V., Liew, L. W., Adams, B. L., & Griffiths, M. D. (2017). Depression, Internet Gaming Disorder, and the Moderating Effect of the Gamer-Avatar Relationship: An Exploratory Longitudinal Study. International Journal of Mental Health and Addiction, 1-23.

CBS NEWS. (December 1, 2017). Cellphones, video games, eyed in teen suicide study. Retrieved from https://www.cbsnews.com/news/teen-suicide-study-cellphones-video-games/

Dallas Behavioral Healthcare Hospital. (September 12, 2017). Deadly Games: The Growing Trend of Teen Suicide. Retrieved from http://www.dallasbehavioral.com/news/deadly-games-the-growing-trend-of-teen-suicide

Desai, R. A., Sarin, S. K., Cavallo, D., & Potenza, M. N. (2010). Video game playing in high school students: health correlates, gender differences and problematic gaming. Pediatrics, 123(6), e1414-e1424. doi: 10.1542/peds.2009-2706

Ferguson, C. J. (2011). A meta-analysis of pathological gaming prevalence and comorbidity with mental health, academic and social problems. Journal of Psychiatry Research, 45, 1573–1578. Retrieved from http://www.christopherjferguson.com/Video%20Game%20Addiction.pdf

Filmora. (2018). Digital Video Game Trends and Stats for 2018. Retrieved from https://filmora.wondershare.com/infographic/video-game-trends-and Kuss, D. J., Griffith, M. D., and Pontes, H. M. (2016). Chaos and confusion in DSM-5 diagnosis of Internet Gaming Disorder: Issues, concerns, and recommendations for clarity in the field. https://doi.org/10.1556/2006.5.2016.062 -stats.html

Griffiths, M. D., & Hunt, N. (1998). Dependence on computer games by adolescents. Psychological Reports, 82, 475-480. Retrieved from https://www.academia.edu/429677/Griffiths_M.D._and_Hunt_N._1998_._Dependence_on_computer_games_by_adolescents._Psychological_Reports_82_475-480

Grooten, J. and Kowert, R. (2015). Going Beyond the Game: Development of Gamer Identities Within Societal Discourse and Virtual Spaces. Retrieved from http://journals.sfu.ca/loading/index.php/loading/article/view/151/189

Haagsma, M. (2008) Gaming behavior among Dutch males: prevalence and risk factors for addiction. Retrieved from https://essay.utwente.nl/58889/1/scriptie_M_Haagsma.pdf

Hellström, C., Nilsson, K. W., Leppert, J., & Åslund, C. (2015) Effects of adolescent online gaming time and motives on depressive, musculoskeletal, and psychosomatic symptoms. Upsala Journal of Medical Science. 120:4, 263-275. DOI: 10.3109/03009734.2015.1049724

Kowert, R., Griffith, M. D., and Oldmeadow, J. A. (2012) Geek or Chic? Emerging Stereotypes of Online Gamers. Bulletin of Science, Technology & Society. DOI: 10.1177/0270467612469078

Kowert, R., & Oldmeadow, J. (2012). The stereotype of online gamers: new characterization or recycled prototype? DiGRA Nordic '12: Proceedings of 2012 International DiGRA Nordic Conference. Retrieved from http://www.digra.org/wp-content/uploads/digital-library/12168.23066.pdf

Kowert, R., & Quandt, T. (Eds.). (2015). The video game debate: Unravelling the physical, social, and psychological effects of video games. New York, USA: Routledge.

Kuss, D. J., & Griffiths, M. D. (2012). Online gaming addiction in children and adolescents: A review of empirical research. Journal of Behavioral Addictions, 1(1), 3–22. doi: 10.1556/JBA.1.2012.1.1

Kuss, D. J., Griffith, M. D., and Pontes, H. M. (2016). Chaos and confusion in DSM-5 diagnosis of Internet Gaming Disorder: Issues, concerns, and recommendations for clarity in the field. https://doi.org/10.1556/2006.5.2016.062

Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and validation of a game addiction scale for adolescents. Media Psychology, 12, 77-95. doi: 10.1080/15213260802669458

Newzoo. (2017). The Filipino Gamer | 2017. Retrieved from https://newzoo.com/insights/infographics/the-filipino-gamer

Newzoo. (2018). China Games Market 2018. Retrieved from https://newzoo.com/insights/infographics/china-games-market-2018/

Park, S., Jeon, H.J., Son, J. W., Kim, H., and Hong, J. P. (2017). Correlates, comorbidities, and suicidal tendencies of problematic game use in a national wide sample of Korean adults. International Journal of Mental Health Systems. 11:35 DOI 10.1186/s13033-017-0143-5

Saunders, J. B., Hao, W., Long, J., King, D. L., Mann, K., Fauth-Bühler, M., Rumpf, H-J., Bowden-Jones, H., Rahimi-Movaghar, A., Chung, T., Chan, E., Bahar, N., Achab, S., Lee, H. K., Potenza, M., Petry, N., Spritzer, D., Ambekar, A., Derevensky, J., Griffiths, M. D., Pontes, H. M., Kuss, D., Higuchi, S., Mihara1, S., Assangangkornchai, S., Sharma, M., Kashef, A. E., Ip, P., Farrell, M., Scafato, E., Carragher, N. and Poznyak, N. (2017). Gaming disorder: Its delineation as an important condition for diagnosis, management, and prevention. Journal of Behavioral Addictions 6(3), pp. 271–279 (2017) DOI: 10.1556/2006.6.2017.039

South China Morning Post. (September 4, 2018). Gaming addiction under spotlight in China as regulators tighten control on industry. Retrieved from https://www.scmp.com/tech/apps social/article/2162773/gaming-addiction-under-spotlight-china-regulators-tighten-control

Statista. (2018). Number of active video gamers worldwide from 2014 to 2021 (in millions). Retrieved from https://www.statista.com/statistics/748044/number-video-gamers-world/

Statista. (2018). *Share of gamers by gender and age in the Philippines in 2017** Retrieved from https://www.statista.com/statistics/712718/share-of-gamers-by-gender-and-age-the-philippines/

Swendsen, J. D., & Merikangas, K. R. (2000). The comorbidity of depression and substance use disorders. *Clinical Psychology Review, 2*0(2), 173-189. doi:10.1016/S0272-7358(99)00026-4

UNILAD. *How An Online Game Is Making Children Commit Suicide.* Retrieved from https://www.unilad.co.uk/featured/how-an-online-game-is-making-children-commit-suicide/

Wang, C. W., Chan, C. L. W., Mak, K. K., Ho, S. Y., Wong, P. W. C., and Ho, R. T. H. (2014). Prevalence and Correlates of Video and Internet Gaming Addiction among Hong Kong Adolescents: A Pilot Study. Hindawi Publishing Corporation *The Scientific World Journal Volume 2014,* Article ID 874648, 9 pages http://dx.doi.org/10.1155/2014/874648

WePC. (May, 2018). 2018 *Video Game Industry Statistics, Trends & Data.* Retrieved from https://www.wepc.com/news/video-game-statistics/

World Health Organization. (2018). *Gaming disorder.* Retrieved from http://www.who.int/features/qa/gaming-disorder/en/

World Health Organization. (March 22, 2018). *Depression.* Retrieved from http://www.who.int/news-room/fact-sheets/detail/depression

Wei, H. T., Chen, M. H., Huang, P.C., and Bai, Y. M. (2012). *The association between online gaming, social phobia, and depression: an internet survey.* BMC Psychiatry 2012 12:92. doi:10.1186/1471-244X-12-92

Wu, A. M. S., Chen, J. H., Tong, K-K., Yu, S. And Lau, J. T. F. (2018). Prevalence and associated factors of Internet gaming disorder among community dwelling adults in Macao, China. *Journal of Behavioral Addictions 7*(1), pp. 62–69 (2018). DOI: 10.1556/2006.7.2018.1

Knowledge, Attitude & Practices on Primary Health Care Services on Maternal Health and Family Planning among Barangay Health Workers of San Andreas, Quezon: Basis for an Enhancement Program

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Abstract

Community Health Workers (CHW) or locally known as Barangay Health Workers (BHW), are people who have undergone training programs under any accredited government and non-government organization; they voluntarily render primary health care services in the community after having been accredited to function as such by the local health board in accordance with the guidelines promulgated by the health department. Currently, there are 229,830 registered BHWs in the Philippines. The study investigated the knowledge, attitude, and practices (KAP) of BHWs in terms of the use of the Primary Health Care Services. The study utilized the statistical percentages to indicate the extent of the knowledge, attitude, and practices whereas the spearman method was used to test for relationships. The basis of the study was the Change Theory which underpins that for a change to occur, one should know the level of knowledge, attitude, and practice of the people. Results showed that BHWs have a better knowledge (86.7%) and attitude (87.5%) but has poor practice (37.8%). Further, knowledge ($r = 0.174$, $p = 0.105$), and attitude ($r = -0.089$, $p = 0.412$) were not significantly related to practice. The result of the study was a basis of a Primary Health Care program to enhance the knowledge, attitude, and skills of the BHWs.

Keywords: *Barangay Health Workers (BHW), Primary Health Care Services, KAP*

Health is the most precious commodity of humanity. Healthy individuals, families, and communities are vital in creating a healthier world; and one of the most important health instruments in creating a healthier world are the Community Health Workers (CHWs) or locally known as Barangay Health Workers (BHWs). Harvard Medical School (2018) stated that according to World Health Organization's (WHO) Global Health Workforce Statistics in 2014, there were approximately 1,316,600 CHWs globally. Locally there are 229,830 registered Barangay Health Workers in the Philippines (Community Health Systems Catalog Country Profile: Philippines, 2016). BHWs have a significant role in the communities; they support and assist the delivery of primary health care services in communities. In 1979, the BHW program was initiated with the implementation of the Primary Health Care program and strengthening health promotion at the community level through training BHWs was mandated.

The BHWs are the frontliners in promoting primary health care. According to WHO (2019), primary health care is a whole-of-society approach to health and well-being centered on the health needs and preferences of individuals, families, and communities. It also covers majority of a person's health needs throughout life including prevention, treatment, rehabilitation, and palliative care. According to 18 Congress, House Bill No. 3985 (2019), BHWs are frontliners in primary care services, as they provide assistance and support to physicians, dentist, nutritionist, nurses, and midwives in the community. In 1995, the enactment of Republic Act No. 7883, otherwise known "Barangay Health Workers Benefits and Incentives Act" was hailed to boost primary health care services in the

community such as basic maternal, newborn, and child health services, provide basic first aid, collect vital statistics records and make reports, participate in community meeting, provide assistance to health center activities, nutrition education, and monitoring of feeding; immunization education, monitoring, and dispensing family planning services, sanitation and hygiene promotion.

Two of the most vital PHC services which are commonly provided by the BHWs are the maternal health and family planning. The WHO (2017) define maternal health as a health of a women before and during pregnancy, at childbirth and during the postpartum period. The WHO (2018), indicated that family planning reinforces people's rights to determine the number and spacing of their children. It is also beneficial among women because women's ability to choose if and when to become pregnant has a direct impact on their health and well-being.

Thus, this study determined the level of knowledge and attitude of the respondents on primary health care services (Maternal Health and Family Planning) in relation to their practice. This study was used as a basis of a Primary Health Care module to enhance the knowledge, attitude, and skills of the BHWs. It answered the following:

1. What is the level of knowledge, attitude, and practice of the respondents?
2. Is there significant relationship between the respondents' knowledge and attitude in relation to their practice?
3. Is there significant difference in the practice of maternal health and family health considering the years of service, age and educational attainment?

Theoretical Framework

This study was guided using the stages of change that focuses on the decision-making and intentional behavioural change of an individual. Application of the model has shaped service planning, provision, and implementation. Stages of change also has impacted training agenda at the local, regional, and national levels. Associated areas of motivational interviewing and brief intervention have led health promotion initiatives in areas such as smoking cessation and alcohol-reduction policies, but it recognizes change as a process that unfolds over time, involving progress through a series of stages (LaMorte, 2019).

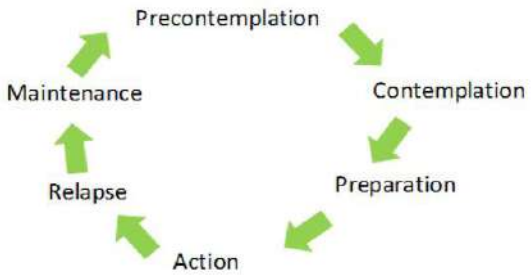

Figure 1. The Stages of Change Model (LaMorte, 2019).

Methodology

This research utilized descriptive-correlational study to investigate the relationship of knowledge and attitude of the respondents in relation to their practice of primary health care services in the community. Using the spearman method of data analysis, this research investigated the relationship of the variables to the demographic data of the respondents.

Data Gathering

A survey questionnaire which was created based on literature was distributed to 88 BHWs through purposive sampling. The survey questionnaire that was validated and underwent forward translation is divided in to two parts. The first part is the demographic profile of the respondents and the second

part is the KAP questionnaire. Prior to the collection of data from the respondents, a letter was given to the Barangay Captain and Municipal Health Officer that sought permission to conduct the study among the San Andres, Quezon's BHWs. A consent was also given to all the respondents before they answered the survey questionnaire.

Ethical Consideration

A memorandum of agreement was signed prior to data gathering. The need assessment data gathering procedure was permitted and supported by San Andres, Quezon Municipal Mayor, Municipal Health Officer, and the seven Barangay Captains. Prior to the data collection from the respondents, a consent was secured and signed by the respondents which provided confidentiality and security of their information.

Table 1 shows the demographic profile of the respondents which contribute to the primary health care service's knowledge, attitude, and practice of the respondents. These are the factors that affect the practice of respondents in primary health care services in the community. Moreover, the demographic profile also shows the distribution of the respondents according to age group, years of service, and educational attainment. Majority of the respondents are within 31-40 years old (30.70%) and 41-50 years old (29.50%). Most of the respondents are in the service for 6-10 years (31.80%) while there are six respondents who are in the service for 21 years and above (6.80%). While majority of the respondents are high-school graduate (30.70%) and high-school level (29.50%) which indicates that more respondents are motivated to work effectively as a BHW.

Table 1
Demographic profile of the respondents n=88

Age Group	***n***	**%**
20-30	12	13.60
31-40	27	30.70
41-50	26	29.50
51-59	18	20.50
60 and above	5	5.70
TOTAL	88	100
Years of Service	**n**	**%**
1-5	26	29.60
6-10	28	31.80
11-15	22	25
16-20	6	6.80
21 and above	6	6.80
TOTAL	88	100
Educational Attainment	**n**	**%**
Elementary Level	10	11.40
Elementary Graduate	20	22.70
High-school Level	26	29.50
High-school Gradate	27	30.70
College Level	5	5.70
College Graduate	0	0
TOTAL	88	100

Result and Discussion

Through frequency and percentage, Table 2 presents the result of the KAP (Knowledge, Attitude, and Practice) of the respondents on Maternal Health Care Services. Table 2. Level of KAP (Knowledge, Attitude and Practice) of the Respondents in Primary Health Care Services (Maternal Health and Family Planning)

Table 2

Level of Knowledge, Attitude and Practice of the Respondents on Maternal Health and Family Planning

Variables		Mean	f	%	PHC %	Verbal Interpretation
Knowledge	Maternal Health	1.00	78	88.6	86.9	Good
	Family Planning	.97	75	85.2		
Attitude	Maternal Health	1.00	76	86.4	87.5	Good
	Family Planning	.97	78	88.6		
Practice	Maternal Health	.44	39	43.8	37.8	Poor
	Family Planning	.32	28	31.8		

(f=88, 91-100=Very Good, 81-90= Good, 71-80=Fair, 70 and Below=Poor)

Table 2 shows the level of KAP among the respondents in terms of maternal health and family planning primary health care services. The maternal health and family planning are the two commonly primary health care services that the respondents encounter in the community. Based on Table 2 data results, the respondents have good knowledge and attitude in maternal health and family planning program. But in terms of practice, it is very alarming that most of the respondents are poor in maternal health and family planning primary health care services. The data showed that only 43.8% of the respondents can perform maternal health in their catchment community while only 31.8% of the respondents can perform family panning in their catchment community. In this case, having good knowledge and attitude but poor practice can affect service delivery system of any health care provider in the community. Fernandez (2015) argued that poor practice/skills is a threat to the sustainability of primary health care services. Barangay Health Workers are considered the backbone of effective health care system, they provide direct primary health care, where it is the most needed in rural communities.

This study sought to identify the suitable program intervention training among the BHWs of San Andres, Quezon, which will increase their primary health care services of maternal health and family planning. The result of this study guides the researcher in creating the program intervention training for the respondents to have a better practice of primary health care services such as maternal health and family planning. In the study of Dagangon, Perez and Tapuz, (2014), the lack of general and skills-based training is always mentioned as the barriers for effective performance of the BHWs. In addition, the Department of Health (DOH, 2015) mentioned that BHWs must undergo training programs under any accredited government and non-government organization and who voluntarily renders primary health care services in the community, with the guidelines promulgated by the DOH.

In determining the significant relationship between respondent's knowledge and attitude to their practices, a spearman correlation method was utilized in this research. This was revealed

in table 3.

Table 3
Relationship between the Respondent's Knowledge and Attitude on PHC Services on Maternal Health and Family Planning towards Practice

Variables	Knowledge of PHC Services (Maternal Health)		Attitude of PHC Services (Maternal Health)	
	r	p-value	r	p-value
Maternal Health Practice	-.083	.439	.009	.993
Variables	**Knowledge of PHC Services (Family Planning)**		**Attitude of PHC Services (Family Planning)**	
	r	p-value	r	p-value
Family Planning Practice	.182	.091	-.053	.621

*(n=88; *. Correlation is significant at the 0.05 level (2-tailed); Reject H0)*

Table 3 indicates the correlational relationship of the respondents' knowledge and attitude to their practice of primary health care services (maternal health and family planning). Using the spearman rank correlation, Table 3 data revealed that there is no significant relationship between the respondents' knowledge on maternal health and their practice on maternal health (rs = -.083; p-value = .439). Further, it revealed no significant relationship between the respondents' attitude on maternal health and their practice on maternal health, (rs = -.009; p-value = .993). Maternal health is considered as a vital part of primary health care, poor maternal health my lead to increase maternal death. According to United Nation Population Fund (2019), 2,400 women die in the Philippines every year from preventable causes related to pregnancy and childbirth. To prevent the increasing maternal death globally and locally, Namazzi, et al. (2017) stated that the HWs should conduct four home visits: two during pregnancy and two after delivery. The aim of the visits was to promote birth preparedness and utilization of maternal health services. This is part of the mandated practice of every BHWs in the community.

Result further showed that there is no significant relationship between the respondents' knowledge (rs = .182; p-value = .091) and attitude (rs = -.053; p-value = .621) in relation to their practice in terms of family planning. Poor primary health care services of BHWs in family planning will increase the unmet needs of every woman. According to WHO (2020a), 214 million women of reproductive age in developing countries who want to avoid pregnancy are not using a modern contraceptive method. A training program to increase the practice and skills of BHWs will help the communities with low contraceptive use and individuals who often face social as well as physical barriers in accessing family planning (FP) services. BHWs are helping to address these barriers by bringing information, services, and supplies to women and men in the communities where they live and work rather than requiring them to visit health facilities, which may be distant or otherwise inaccessible (U.S. Agency for International Development, 2011).

Considering the demographic profile of the respondents and their practice on PHC services (maternal health and family planning), ANOVA test was used to reveal the significant difference.

This was revealed on table 4.

Table 4

Relationship between the Respondent's Demographic Profile and PHC Services (Maternal Health and Family Planning) Practice

Variable	Age Group	*n*	$\bar{X}$	SD	F	df	p-value
			Maternal Health				
Maternal Health Practice	20-30 y/o	12	.250	.452	21.681	4,83	.000
	31-40 y/o	27	1.592	.636			
	41-50 y/o	26	1.077	.796			
	50-59 y/o	18	.167	.384			
	60 & Above	5	.000	.000			
Years of Service							
Maternal Health Practice	1-5 years	26	.884	.863	4.607	4,83	.002
	6-10 years	28	1.285	.854			
	11-15 years	22	.727	.767			
	16-20 years	6	.333	.516			
	21& above	6	.000	.000			
Educational Attainment							
Maternal Health Practice	Elem. Level	10	.200	.421	2.444	4,83	.053
	Elem. Grad.	20	.800	.833			
	H.S Level	26	1.115	.908			
	H.S Grad.	27	.888	.847			
	College Level	5	1.200	.836			
	College Grad	0	0	0			
			Family Planning				
Age Group							
Family Planning Practice	20-30 y/o	12	.500	.674	6.386	4,83	.000
	31-40 y/o	27	1.111	.751			
	41-50 y/o	26	.576	.577			
	50-59 y/o	18	.222	.548			
	60 & Above	5	.200	.447			
Years of Service							
Family Planning Practice	1-5 years	26	.769	.764	1.638	4,83	.172
	6-10 years	28	.785	.786			
	11-15 years	22	.454	.595			
	16-20 years	6	.500	.547			
	21& above	6	.166	.408			
Educational Attainment							
	Elem. Level	10	.200	.421	2.025	4,83	.098
	Elem. Grad.	20	.550	.686			
	H.S Level	26	.653	.745			
	H.S Grad.	27	.740	.712			
	College Level	5	1.200	.836			
	College Grad	0	0	0			

The data on Table 4 revealed that there is no significant difference on the maternal health practice and the age distribution of the respondents (F = 21.681, df = (4, 83), p= .000). It also revealed that there is no significant difference in terms of maternal practice and years of service of the respondents (F = 4.607, df = (4, 83), p = .002). Further, Table 4 showed that there is also no significant difference in terms of maternal health practice and the educational attainment of the respondents (F = 2.444, df = (4, 83), p = .053). According to the Sustainable Development Goal (SDG) Goal 3, Good Health and Well-Being part of the health target for the SDG 3 is that by 2030, the global maternal mortality ratio should be reduced to less than 70 per 100 000 live births (WHO, 2020b). Based on the study of Saprii, Richards, and Theobald (2015), a systematic report that CHWs in low-income countries have demonstrated the capacity to improve antenatal, perinatal, and post-partum (maternal health) services to prevent perinatal and maternal deaths by early recognition and referral of CHW to complicated pregnancies. This research study guided the researcher to provide a comprehensive training updates program on maternal health, to enhance the skill and practice of the respondents. Maternal health practice of BHWs in the community is a vital instrument to promote good health of every pregnant woman and those who are on the postpartum stage in the low and middle class community. Their skills in health promotion and education of maternal health in community level is poor due to lack of trainings and program updates.

On the other hand, results showed that there is no significant difference between the family planning practice of the respondents and the age distribution of the respondents (F = 6.386, df = (4, 83), p = .00). The data also revealed that there is no significant difference between the family planning practice of the respondents and their year of service as BHWs (F = 1.638, df = (4, 83), p = .172). Furthermore, the data revealed that there is no significant difference between the family practice of the respondents and their educational attainment (F = 2.025, df = (4, 83), p = .098). Family planning program is considered as an important community contraception program that ensures the access to any preferred contraceptive methods of every woman and couple. The United Nations (2020) ensured that by 2030, there will be universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programs. The role of BHWs in the promotion of family planning in the community is an important aspect of the program. According to USAID (2011), CHWs are particularly effective when programs allow and support them to provide services directly to clients, such as direct provision of contraceptives like pills and condom. It also shows that these workers are more highly effective in providing and referring clients to use contraceptives.

The aim of this study is to enhance the KAP (knowledge, attitude and practice) of the San Andres, Quezon's BHWs, to be able to have a better implementation of primary health care services (maternal health and family planning) in their community. Poor practice of maternal health and family planning has a big impact in the implementation primary health care services in the community. Poor primary health care practice is due to lack of program updates and training of BHWs, which is unable to provide by the Local Government Unit and the Department of Health. According to Dagangon, Perez, and Tapuz, (2014), the main duties of BHWs that was promulgated by the Department of Health was to provide information, education, and motivation on primary health care services such as maternal and child health, family planning

and nutrition in the communities where they live. They also stated that the lack of skills-based training is a barrier to effective BHWs performance. The DOH (2017), specified in the RA 7883, the government endeavors to provide training and continuing education programs to provide professional development to BHWs. It also stipulated that the Department of Health is the one who directed and provides the guidelines for the effective implementation of RA 7883. But it is not been implemented for many BHWs across the country.

Conclusion and Recommendation

Community Health workers and locally known as Barangay Health Workers are the health implementers frontliners that provide the basic primary health care services in the community. Though maternal health and family planning practices of the respondents are poor, their knowledge and attitude are good. However, poor practice of maternal health and family planning program of the respondents indicates poor program implementation in the community. Primary health care services programs like maternal health and family planning are important health services in the community. The BHWs are essential instrument in providing better maternal health and family planning services in the community. If they have poor practice to those services, it will be hard to promote maternal health and family planning to the community people. With the help of proper program updates and training, the respondents' practice of maternal health and family planning will improve. The enhancement of the respondents' practice will also improve the maternal health and family program in the community.

References

Community Health Systems Catalog Country Profile: Philippines (2016). *Community health systems catalog country profile: Philippines.* Retrieved from https://www.advancingpartners.org/sites/default/files/catalog/profiles/apc _philippines_chs_catalog_profile_0.pdf

Country Profile: Philippines (2015). *Country profile: Philippines community health programs.* Retrieved from https://www.advancingpartners.org/sites /default/files/landscape/countries/profiles/apc_landscape_analysis_philippines_formatted_1_finalforweb.pdf

Dagangon, L., Perez, G., & Tapuz, M. (2014). T*raining needs analysis of barangay health workers of Davao City.* Retrieved from https://www.researchgate.net/publication /294108463_Training_Needs_Analysis_of_Barangay_Health_Workers_of_Davao_City

Department of Health (2017). *National BHW Registry System.* Retrieved from https://bhw. doh.gov.ph/articleview.php?ContentID=-1

Department of Health (2015). *WHAT IS BARANGAY HEALTH WORKER?* Retrieved from https://www.doh.gov.ph/faqs/What-is-Barangay-Health-Worker

Eighteen Congress, House Bill No. 3985 (2019). *An act strengthening and institutionalizing the barangay primary health care program, providing security of tenure, benefits, and incentives to barangay health workers and providing funds therefore.* Retrieved from http://www.congress.gov.ph/legisdocs/basic_ 18/HB03985.pdf

Eighteenth Congress of the Republic of the Philippines First Regular Session, House Bill No. 185 (2019). *Instituting the Magna Carta for Barangay Health Workers, Repealing Republic Act No. 7883, Otherwise Known As the Barangay Health Worker's Benefits And Incentives Act Of 1995, Providing Funds Therefor, and for other Purposes.* Retrieved from https://www.senate.gov.ph/lisdata/3041327193!.pdf

Fernandez, D. (2015). *Barangay health workers on the sustainability of primary health care.* Retrieved from https://ejournals.ph/article.php?id=10318

Harvard Medical School (2018). *Cases in global health delivery: Community health workers.* Retrieved from https://www.globalhealthdelivery.org/files/ghd/ files/ghd-c11_chw_concept_note.pdf

LaMorte, W. (2019). *The Transtheoretical Model (Stages of Change).* http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChange Theories6.html

Namazzi, G., Okuga, M., Tetui, M., Muhumuza, R,, Kakaire, A.,2, Namutamba. S., Mutebi, A., Namusoke Kiwanuka, S., Ekirapa-Kiracho, E., & Waiswa, P. (2017). *Working with Community Health Workers to Improve Maternal and Newborn Health Outcomes: Implementation and Scale-up Lessons from Eastern Uganda.* Retrieved from https:// www.ncbi.nlm.nih.gov/pubmed/ 28849718

Saprii, L., Richards, E., & Theobald, S. (2015). *Community health workers in rural India: Analysing the opportunities and challenges accredited social health activists (ashas) face in realising their multiple roles.* Retrieved from https://human-resources-health. biomedcentral.com/articles/10.1186/s12960-015-0094-3

United Nation Population Fund. (2019). *Maternal health.* Retrieved from https://philippines. unfpa .org/en/topics/maternal-health-3

U.S. Agency for International Development (2011). *Community health workers: Bringing family planning services to where people live and work.* Retrieved from http://www.chwcentral. org/sites/default/ files/Community%20Health%20Workers_Bringing%20family%20 planning%20services%20to%20where%20people%20live%20and%20work_0.pdf

United Nation (2020). *Goal 3: Good health and wellbeing.* Retrieved from https://www. un.org/ sustainabledevelopment/health/

World Health Organization. (2019). *Primary health care.* Retrieved from https://www.who .int/ news-room/fact-sheets/detail/primary-health-care

World Health Organization. (2017). *Maternal health.* Retrieved from https://www.who.int/ health- topics/maternal-health#tab=tab_1

World Health Organization. (2018). *Family planning/contraception.* Retrieved from https:// www.who.int/news-room/fact-sheets/detail/family-planning-contraception

World Health Organization. (2020a). *Family planning/contraception.* Retrieved from https:// www.who.int/news-room/fact-sheets/detail/family-planning-contraception

World Health Organization. (2020b). *Sustainable development goal: SDG 3: Ensure healthy lives and promote wellbeing for all at all ages.* Retrieved from https://www.who .int/sdg/ targets/en/

Reformulation of the Anti-Inflammatory Cream from Saccharum spontaneum Linn. Root Extract and Its Characterization and Stability Testing

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Abstract

The need for cheaper efficacious medications led the work of Lapuz in 2014 on Saccharum spontaneum, which identified that 2% crude extract cream formulation of Saccharum spontaneum Linn. root has a comparable anti-inflammatory activity in respect to 1% Diclofenac sodium. However, safety and efficacy are prime standards required of pharmaceuticals, for which Nival in the 2017 stage of continued thesis, carried out a characterization and stability study on the Lapuz 2016 cream and found incompatibilities, thence recommended reformulation of the cream. The 2018 stage of the continued thesis aimed to improve the qualities of the cream by modifying the pioneer formula through the addition of new excipients. The efficacy of the newly formulated cream was tested in laboratory animals after which characterization and stability testing was performed. The data obtained was presented as mean ± standard deviation of parallel measurements. The difference between treatment groups was analyzed using ANOVA followed by Dunnett's test using SPSS. The three agents (the placebo, 2% S. spontaneum, and 1% Diclofenac Sodium) used showed no significant difference in their activity. Hence, the 2% S. spontaneum root extract cream cannot be said to have no anti-inflammatory activity. Upon characterization and accelerated stability testing, the reformulated 2% anti-inflammatory cream showed stability in pH and yielded good results in texture profile. It showed stability in phase separation and color except at temperatures 30° and 40. However, it showed presence of microbial growth at all temperatures. The researchers recommend the use of other anti-inflammatory methods to further evaluate the efficacy of the cream.

Keywords: *Saccharum spontaneum Linn, reformulation, characterization, accelerated stability testing (study), anti-inflammatory activity*

Inflammation occurs when tissues are damaged, or result from the immediate and painful events that follow trauma. Inflammation mobilizes the body's defenses and isolates and destroys microorganisms, foreign materials, and damaged cells so that tissues' repair can proceed. Inflammation is characterized by five major symptoms which are unpleasant but usually beneficial. These major symptoms includes: redness, heat, swelling, pain and disturbance of function. Chemical mediators such as Histamine and Prostaglandins are involved in the inflammatory response (VanPutte, 2016).

Pioneer researchers Lapuz (2014), conducted a study on Saccharum spontaneum Linn., to determine its antimicrobial and anti-inflammatory activity, of which the study proved this plant substance to have a better anti-inflammatory activity at 2% of the crude 95% ethanolic extract of the root of S. spontaneum Linn with respect to 0.5%, 1% and 1.5% of the crude extract.

In lieu with the work of (Lapuz et al, 2014), the cream formulation has undergone other different studies such as acute dermal irritation based on the Draize scheme which classified the cream as non-irritant (Requilme, 2016), and accelerated stability testing which concluded that the cream showed incompatibilities of parameters like pH, appearance, separation of components and

microbial growth and thence called for its reformulation (Nival, 2017). With the need for improvement on the topical cream formulation, the researchers aimed to reformulate the said product, its color, homogeneity, and phase separation.

Methodology

This study reformulated the cream to overcome the incompatibilities that the previous researchers had identified by the following methods:

Collection and Authentication of Plant Sample

S. spontaneum roots were collected from San Roque, Bitas, Arayat, Pampanga, Philippines during the month of September, 2017. The plant sample was authenticated at the Bureau of Plant Industry (BPI) Philippines.

Preparation of the Ethanolic Root Extract

Five hundred grams (500g) of the dried plant material was used for the extraction process with 95% ethanol which was soaked for 48 to 72 hours with frequent agitation. The extract was filtered using Buchner filtration and then the filtrate was concentrated under reduced pressure at 40˚C through a rotary evaporator after which it was lyophilized. The powdered extract was re-suspended in the solvent to yield 2% w/v of solution (Lapuz, 2014).

Formulation of Cream

The desired amounts of ingredients was weighed and measured. Cetostearyl alcohol was melted in an evaporating dish over a water bath to a temperature no higher than 60˚C. After melting, the liquid petrolatum was added and then removed from heat. The mixture was stirred and formed the oily phase. Next was the addition of freshly boiled and cooled purified water to a beaker and heated to 60˚C. The S. spontaneum root extract was added to the freshly boiled and cooled purified water and then removed from heat. The mixture was stirred to form the aqueous phase. When both phases are at about 60˚C, the aqueous phase was added to the oily phase with constant, but not too vigorous stirring. The mixture was stirred until cool enough to pack. Thirty grams of the product was packed in a suitable container and then labeled (Marriott, 2010).

Table 1
Formula for 2% S. spontaneum Linn. root extract cream

Ingredient	Amount
Crude Extract	20.00g
Cetostearyl	43.71g
Liquid Petrolatum	348.38g
Distilled H20	341.88g
Methyl paraben	0.45g
Propyl paraben	0.18g
Acacia	150.00g
Propylene glycol	200mL
Beewax	52.60g
Triethanolamine	20mL
Colorant	5.95mL
To Make	1000g

The initial formula from the pioneer set was retained but few modification were made to improve the cream's color/appearance and homogeneity. These modifications include; addition of Beeswax and Acacia to the non-aqueous phase as hardening and emulsifying agents respectively, and addition of methyl and propyl parabens, propyl glycol, propylene glycol, triethanolamine and orange color to the aqueous phase as preservatives, solubilizing agent, pH adjuster and colorant respectively. Extensive research for the incompatibilities of

these proposed excipients had been done and none of them were found to be incompatible with each other or those present in the original formula (Rowe, 2009). Therefore, formulation trials were performed by incorporating the excipients in small portions to the cream formulation starting with the lower boarder of the allowed percentage until a desired formula was achieved.

Evaluation of Formulated Cream.

1. Physical Appearance

Physical evaluation of the formulated cream includes color, and phase separation that were visually analyzed by the researchers (Smaoui, Hlima, Chobba, & Kadri, 2013).

2. Determination of pH

The pH of the cream must be suitable and within the range for the skin's pH of humans which is pH 4.5 - 6.00. Hence, this test was performed by subjecting the cream in the electrode of pH meter (Knevel, 1977).

3. Texture Profile on the Skin

This was evaluated as spreadibility, after feel, type of smear, and removal (Sabale, 2011).

4. Microbial Test

Samples for microbial test was prepared by dispersing 1 gram of cream in a 4.5 mL sterile Ringer's solution with 0.25% tween 80. preparation of six dilutions available as 10-1, 10-2, 10-4, 10-6, 10-8, 10-10 was made using dilution method. 50 microliters of the sample dilution was inoculated using drop plate method into different media available in triplicates. The formulated cream subjected to 00C, 25 – 300C and 40 – 450C was used in the microbial testing (USP NF 2, 2016). Presence of Staphylococcus aureus, Pseudomonas aeruginosa and Candida albicans were tested for in the formulation.

Anti-Inflammatory Study

1. Laboratory Animal Acquisition,

Acclimatization and Authorization

Sprague-Dawley rats were used as our test animals. They were acquired from Mots Animal House, Laguna, Philippines and were adult male Sprague-Dawley rats having a weight of 150g – 200g which was acclimatized for a period of 1 - 2 weeks to ensure that they have adjusted to their new environment (Del Castillo-Solevilla, 2010). Sufficient food and proper beddings were provided during Acclimatization and they were housed in large polypropylene cages. Animal Handling certification and Approval was given by Institutional Animal Care and Use Committee (IACUC) of Adamson University Manila before and after the use of laboratory animals.

2. Carageenan-Induced Edema Testing

Animals were denied food for 24 hours before the experiment with free access to water. Approximately 0.1mL of a 1% suspension of carrageenan solution was injected into the plantar side of right hind paw of rats. Paw volume was measured and noted immediately after the carrageenan injection. Afterwards, 0.2g of herbal gel containing 2% S. spontaneum Linn extract was applied to the plantar surface of the hind paw by gently rubbing 50 times with the index finger. As for the standard, test animals of the control groups received the placebo and 0.2 g 1% Diclofenac sodium gel applied in the same way as the other group. Paw volume was measured immediately after carrageenan injection and at 1, 2, 3 and 4 hours intervals by using a plethysmometer (Kulkarni, Kewatkar, Lande, Phanse, & Chaudhari, 2010).

Data Collection and Analysis

The obtained data was presented as mean ± standard deviation of parallel measurements. The difference between the

treatments groups were analyzed using TWO WAY Analysis of Variance (ANOVA) followed by Dunnett's test using SPSS version 20 software. A p-value of less than 0.05 was considered significant (Kulkarni et al. 2010).

Results and Discussion

The roots of S. spontaneum contains the active component responsible for its anti-inflammatory effect. The roots were obtained from Arayat, Pampanga, followed by extraction with the use of 95% ethyl alcohol for 24-48 hours. The extract was filtered and concentrated with the use of rotary evaporator. The concentrated extract was lyophilized and its reformulation was conducted. The cream was subjected to different storage conditions and using different parameters such as physical appearance (which comprised color and phase separation), pH, texture on skin and microbial stability for the accelerated stability study. Pull out and characterization were performed on certain batches on the 1st, 2nd and 3rd months after formulation.

Table 2
Physical characteristics of reformulated 2% S. spontaneum Linn. root extract cream stored at different temperatures

	Temperature	M 0	M 1	M 2	M 3
Color	0 ± 2°C/75%RH ± 5%	DB	DB	DB	DB
	30±2°C/75%RH±5%	DB	DB	DB	BB
	40±2°C/75%RH±5%	DB	DB	BB	BB
Phase Separation	0 ± 2°C/75%RH ± 5%	NC	NC	NC	NC
	30±2°C/75%RH±5%	NC	NC	NC	L
	40±2°C/75%RH±5%	NC	SC	L	L
pH	0 ± 2°C/75%RH ± 5%	5.57	5.57	5.74	5.83
	30±2°C/75%RH±5%	5.57	5.35	5.52	5.53
	40±2°C/75%RH±5%	5.57	5.25	5.41	5.33

DB = Dark Brown; BB = Blackish Brown
NC = No Change; SC = Slight Change; L = Liquefies
M = Month (0, 1, 2, 3)

Table 2 shows that the pH of the cream is within the range for the skin's pH of humans which is pH 4.5 - 6.00 and that all cream formulation stored at different temperature conditions maintained pH within that specified for the human skin. Phase separation was still displayed by the cream but at higher temperature as the stability study continued. The color of the cream also changed as with the length of the study.

Table 3 shows the texture profile of the cream on the skin which significantly depends on the formulation itself. Subjective method of analysis was employed to examine the texture profile of the cream. Based on the evaluation of the random volunteers, the cream showed good spreadibility all throughout the study. The cream generally had a slightly emollient after feel except in month 1, 40°. Furthermore, the cream showed a range of greasiness. In the month 0,

all temperature were recorded to have a non-greasy smear, at month 1 and 2 it was a mixture of slightly greasy and greasy results and finally in month 3 all cream were deemed greasy by the volunteers and the cream was slightly easy to removal from the skin.

Table 3
Characterization of reformulated cream upon Application on skin

M	Temperature	Parameters			
		S	AF	ToS	R
0	0 ± 2°C/75%RH ± 5%	G	SE	NGz	SEs
	30±2°C/75%RH±5%	G	SE	NGz	SEs
	40±2°C/75%RH±5%	G	SE	NGz	SEs
1	0 ± 2°C/75%RH ± 5%	G	SE	NGz	SEs
	30±2°C/75%RH±5%	G	SE	SGz	SEs
	40±2°C/75%RH±5%	G	E	SGz	SEs
2	0 ± 2°C/75%RH ± 5%	G	SE	Gz	SEs
	30±2°C/75%RH±5%	G	SE	Gz	SEs
	40±2°C/75%RH±5%	G	SE	SGz	SEs
3	0 ± 2°C/75%RH ± 5%	G	SE	Gz	SEs
	30±2°C/75%RH±5%	G	SE	Gz	SEs
	40±2°C/75%RH±5%	G	SE	Gz	SEs

G = Good; S = Satisfactory; SEs = Slightly Easy; Easy = Es;
E = Emollient; SE = Slightly Emollient; LE = Less Emollient;
NGz = None Greasy; SGz = Slightly Greasy; Gz = Greasy;
S= Spreadibility; AF=After feel; ToS=Type of smear; R=Removal
M = Month (0, 1, 2, 3)

Table 4
Results for Staphylococcus aureus test

M		10^{-1}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}
0	0°	0.000	0.000	0.000	0.000	0.000	0.000
	30°	0.000	0.000	0.000	0.000	0.000	0.000
	40°	0.000	0.000	0.000	0.000	0.000	0.000
1	0°	0.000	0.000	0.000	0.000	0.000	0.000
	30°	0.000	0.000	0.000	0.000	0.000	0.000
	40°	0.000	0.000	0.000	0.000	0.000	0.000
2	0°	0.333	0.667	0.000	0.000	0.333	0.000
	30°	0.333	0.000	0.000	0.000	0.333	0.000
	40°	0.333	0.000	0.333	0.667	0.333	0.000

M = Month (0, 1, 2, 3)
Values = average of triplicate colony count of microorganism

Table 5
Results for Pseudomonas aeroginosa test

M		10^{-1}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}
0	0°	3.667	3.333	8.000	6.333	3.000	3.000
	30°	1.667	2.667	3.667	4.000	0.000	6.333
	40°	2.333	6.333	9.000	5.333	1.333	1.333
1	0°	10.333	4.333	5.333	6.667	4.333	7.333
	30°	12.667	9.667	6.000	4.000	6.000	5.333
	40°	5.000	7.667	4.333	7.000	5.000	4.667

M = Month (0, 1, 2)
Values = average of triplicate colony count of microorganism

Table 6
Results for Candida albicans test

M		10^{-1}	10^{-2}	10^{-4}	10^{-6}	10^{-8}	10^{-10}
0	0°	25.000	15.333	18.333	21.000	17.333	14.333
	30°	7.667	6.667	8.333	16.000	23.000	21.333
	40°	5.667	5.333	10.667	13.333	13.333	11.333
1	0°	27.667	24.333	19.333	23.000	28.333	22.333
	30°	27.667	16.667	21.667	23.000	14.333	20.667
	40°	20.000	19.333	22.333	18.333	26.000	18.667

M = Month (0, 1, 2)
Values = average of triplicate colony count of microorganism

Tables IV, V, and VI are the results of microbial testing for Staphylococcus aureus,, Pseudomonas aeroginosa and Candida albicans respectively which indicate growth of these microorganisms which the study intended to prevent by the addition of preservatives to the new formulation. This implies that the amount of preservatives added to the new formulation are not adequate.

Table 7
Statistical Analysis of the Anti-inflammatory Activity of the 2% Saccharum spontaneum Linn. root extract cream and the Control Groups on the Sprague-Dawley Rats (n=3) at Different Time Periods

Variable	F-Statistics	p-value
Treatment Groups	1.56	0.3162
Time	4.98	0.0468
Interaction of Treatment and Time	0.35	0.8958

**p-value of less than 0.05*

Table 7 illustrates the result of the statistical analysis of the comparison of the anti-inflammatory activity of the 2% Saccharum spontaneum Linn. root extract cream and control groups on the Sprague-Dawley Rats (n=3) at different time periods. Since the p-value=0.8958 is greater than α=0.05, there is no interaction between the treatment groups and time. This indicates that the changes in the volume inflammation of the rats is the same for all treatment groups at different time periods. There is, however, a significant change (p-value=0.0468) in the volume of inflammation in at least one of the time periods.

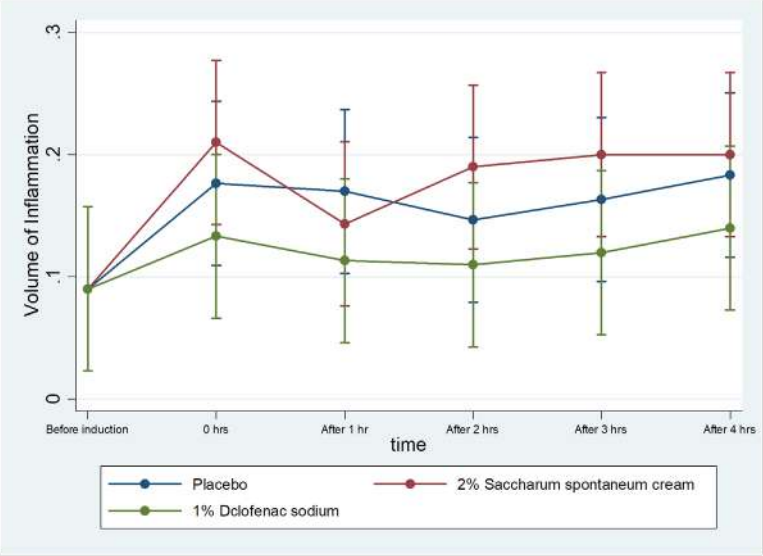

Figure 1. Volume of Inflammation of the Sprague-Dawley Rats (n=3) treated with 2% Saccharum spontaneum Linn. root extract cream and Control at Different Time Periods

Figure I is the plot of the mean actual values obtained from the Carageenan-Induced Edema testing, which shows the increase and steady level of the paw volume of the hind leg all throughout the four hours of observation.

Conclusions and Recommendations

The results obtained from the anti-inflammatory study, based on the results of all three agents (the placebo, 2% S. spontaneum and 1% Diclofenac Sodium) used in the test have showed no significant difference in their activity. Hence, the 2% S. spontaneum root extract cream cannot be said to have no anti-inflammatory activity.

Upon characterization and subjection to accelerated stability testing, the reformulated 2% anti-inflammatory cream showed stability in pH and also yielded good results in texture profile on skin. It also showed stability in phase separation and color except at temperatures 30° and 40° which indicates that these temperatures are not suitable for the storage of the formulation and that the cream should be refrigerated. However, it showed presence of microbial growth at all temperatures.

The researchers recommend the use of other different anti-inflammatory methods to further evaluate the efficacy of the cream since the cream and controls had no significant

difference based on Carageenan edema induced test. The researchers would also recommend that the next batch of researchers should employ other extraction methods and also semi-purification of the crude extract should be performed to obtain the agent(s) with the anti-inflammatory activity.

References

Del Castillo-Solevilla, R. (2010). *Pharmacology laboratory Manual (Revised Edition ed.).* Manila: University Santo Tomas Press.

Knevel, A. M. (1977). *Jenkins Qualitative Pharmaceutical Chemistry (7th ed.).* New York: Mc Graw.

Kulkarni, P.A., Kewatkar, S., Lande, M.D., Phanse, M.A., & Chaudhari, P.D. (2010). Topical Anti-Inflammatory activity of Herbal Gel Formulation. *Scholars Research Library.* Retrieved from www.researchgate.net/publication/268241787_Topical_anti-inflammatory_activity_of_herbal_gel_formulation

Lapuz, A. A. (2014, March). *Preformulation and anti-inflammatory and anti-bacterial testing of Saccharum spontaneum Linn. root extract. Preformulation and anti-inflammatory and anti-bacterial testing of Saccharum spontanum Linn. root extract.* Manila, Metro Manila, Philippines.

Marriott, J. W. (2010). *Pharmaceutical Compounding and Dispensing (2nd Edition ed.).* London: Pharmaceutical Press.

Nival, J. P. (2017, March). *Characterization and Accelerated Stability testing of formulated cream containing root extract of Saccharum spontaneum Linn.* Manila, Metro Manila, Philippines.

Requilme, J. C. (2016, March). *Acute dermal irritation of the Anti-inflammatory cream made from the root extract of Saccharum spontaneum Linn.* Manila, Metro manila, Philippines.

Rowe, R. S. (Ed.). (2009). *Handbook of Pharmaceutical Excipients (6th Edition ed.).* London: Pharmaceutical Press.

Sabale, V. K. (2011). *Formulation and in vitro evaluation of the topical antiageing preparation of the fruit of Benincasa hispida.* J. Ayurveda Integrated Medicine, 2(3)(Doi: 10.4103/0975-9476.85550), 124-128.

Smaoui, S., Hlima, H., Chobba, I., & Kadri, A. (2013). Development and Stability Studies of Sunscreen Cream Formulations containing Three Photo-protective Filters. *Arabian Journal of Chemistry.* Retrieved from www. researchgate.net/publication/236017012_ Development_and_ stability_studiesof_sunscreen_cream_formulations_containing_ three_photo-protective_ filters

Swathy, B. M. (2010). Evaluation of Analgesic and Anti-inflammatory Properties of Chloris barbata (SW.). *International Journal of Phytopharmacology, 1*(2), 92-96. Retrieved Aug 24, 2017, from http://www.onlineijp.com

USP NF, 2. (2016). *U.S. Pharmacopeia National Formulary (39 ed.).* Rockville, MD: United Book Press, Inc.

VanPutte, C. R. (2016). *Seeley's Essential of Anatomy & Physiology (9th ed.).* New York: Mc Graw Hill Education

Understanding the Life-World of Multi-Drug Resistant (MDR) Clients through Phenomenology

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Abstract

This study aimed to understand, analyze and reflect on the lived experiences of Multi-Drug Resistant (MDR) clients currently undertaking treatment in a satellite health center facility in Pampanga, Philippines. Descriptive phenomenology was used as its design. It involves seven (7) key informants with the following inclusion criteria: 1) A Multi-Drug Resistant Client; 2) at least 18 years old, 3) currently undertaking treatment in Satellite Treatment Center for MDR, and 4) willing to participate which were recruited via purposive sampling technique and through the help of a gatekeeper. An open-ended semi-structured interview guide was utilized as its instrument. Cold and warm analyses were employed in analyzing the data. Results revealed seven (7) significant patterns: 1) Adverse effects of medication, 2) awareness of medical programs, 3) process of identifying Multi-Drug Resistance patients, 4) willingness to undergo treatment, 5) impact of treatment to Multi-Drug Resistance patients, 6) creating relationship between Multi-Drug Resistance patients and 7) satisfaction of Multi-Drug Resistance patients with health workers and medical program. Understanding, encouragement, comfort, and motivation from the community and especially family members are the keys to strengthening the quality of lives of those who were under the treatment program of a satellite health center for MDR clients.

Keywords: *multi-drug resistant clients, MDR, descriptive-phenomenology*

Tuberculosis (TB) is considered the world's deadliest disease and remains a major public health problem in the Philippines according to Cuevas et al (2007). Tuberculosis (TB) is a highly infectious chronic disease caused by the tubercle bacilli. It is primarily a respiratory disease but can also affect other organs of the body and is common among malnourished individuals living in crowded areas. The mode of transmission is through airborne droplets such as coughing or sneezing (Cuevas et al (2007).

According to Yin, Yuan, Hu, &Wei (2016), multidrug-resistant tuberculosis (MDR-TB) represents a major obstacle towards successful TB control. Directly observed therapy (DOT) was recommended by World Health Organization (WHO) to improve adherence and treatment outcomes of MDR-TB patients, however, the effectiveness of DOT on treatment outcomes of MDR-TB patients was mixed in previous studies. Several countries have included this strategy into their national MDR-TB control programs However in practice, many programs only provided DOT in the intensive phase or used patient self-administration during the DOTS period.

A study conducted by Zhang, Wang, Shi, Han, Zhao, Zhang, et al. (2015). et al. (2016), Multi-drug resistance (MDR) has been a cause of concern for tuberculosis (TB) control in both developed and developing countries. This study described the characteristics and risk factors associated with MDR-TB among 287 cases and 291 controls in Henan province, China. Additionally, there is a compelling need for better management and control of MDR-TB,

particularly through increasing laboratory capacity, regular screening, enhancing drug sensitivity testing, novel MDR-TB drug regimens, and adherence to medication. According to Duan, Chen, Chen, Zhang, Lu, Yang, et al. (2016), in recent years, drug-resistant tuberculosis (DR-TB) particularly the emergence of multidrug-resistant tuberculosis (MDR-TB) has become a major public health issue. Different drug resistance patterns were found by subgroup analysis according to geographic areas, subject enrolment time, and methods of drug susceptibility test (DST). The prevalence of resistance to any drug dropped for both new and retreatment cases, and multi-drug resistance declined among new cases but became more prevalent among retreatment cases compared to the data before 2008. Therefore, drug-resistant tuberculosis, particularly multi-drug-resistant tuberculosis among retreatment TB cases is a public health issue.

The first National Drug Resistance Survey was done in 2003 – 2004 and revealed the following prevalence of drug resistance: 4% among the new cases, 21% among the re-treatment cases, and 5.7% combined. The second national Drug Resistance Survey was done in 2011-2012 and showed a decrease in the prevalence of drug resistance among new cases from 4% to 2%. However, there was no change in the prevalence of drug resistance re-treatment cases which remained at 21% (DOH, 2014). We are motivated to conduct this study because of their concern and curiosity about what is behind this controversial condition and aspects regarding the change of an individual's point of view about him/ her after practicing and involving in this type of unusual serious matter. This may clarify some things to the patient suffering from this disease and on how their simple condition leads to its complications that cause a tremendous burden to their everyday living. Therefore, as researchers, we are bound to become curious regarding their coping mechanisms as they become clients under a control program; hence, this makes us probe this central question: *"What characterizes the lived experiences of Multi-Drug Resistant Clients under the care of Multi-Drug Resistant Program?"*

Methods

The study utilized a descriptive-phenomenological study to understand, analyze and reflect on the lived experiences of Multi-Drug Resistant (MDR) clients under the treatment of a satellite health center. Purposive sampling was used for the qualitative inquiry of this study wherein the samples in this design are chosen based on the criteria set by the researcher. The individual is chosen as a sample by the investigator due to good information that he is a representative of the total population (Calmorin and Calmorin-Pieded, 2007). Purposive sampling technique was employed with the following inclusion criteria: must be a Multi-Drug Resistant Client and enrolled at Satellite Treatment Center for MDR. It involved 5 informants in this study who were 1) A Multi-Drug Resistant Client; 2) at least 18 years old, 3) currently undertaking treatment in Satellite Treatment Center for MDR, and 4) willing to participate. However, additional 2 informants were added to ensure that the saturation of data (redundancy of data) was achieved by the researchers. The gatekeeper was also utilized to reach the key informants in which a nurse that handles these clients. Gatekeeper is a term used in social analysis to refer to persons who can arbitrate access to a social role, field setting or structure (Polit & Beck, 2012). For the research tool, we utilized a semi-structured interview guide which was validated by three experts (1) Community health nurse practitioner, 2) dean of the college of nursing, & 3) psychometrician). After the validation, letters for seeking interview approval was

then given to the Head Officer of the satellite health center. Then, the researcher was then endorsed to the gatekeeper who has access to the MDR clients. Consent was given to the key informants and secured by the researchers. Moreover, explanations were provided regarding the purpose of the conduction of the study and what will be the consequence of participating in the study. They were also informed regarding the mechanics of the data collection including the observation and they were allowed to withdraw anytime they wish when they wanted to. An interview was conducted to collect the data that lasts for about 30-45 minutes. During the process, no withdrawal was noted from the informants. To understand the life-world of the informants, we conducted a non-participant observation which was included in the field notes for the data analysis. Likewise, consent was secured in every observation we made. For the data analysis, we transcribed the interviews verbatim and it was re-read and compared by the researchers for the accuracy. We used the repertory grid to identify significant statements from the informants. We utilized the cold and warm analyses for the clustering of significant themes of the study. The cold analysis was the extraction of significant statements and warm analysis was the grouping of significant statements into a cluster of themes or patterns (Orte & Bautista, 2018). After significant themes were derived, we go back to the participants to clarify our findings to their experiences as part of maintaining our trustworthiness and rigor of the data (Polit & Beck, 2012).

Results and Discussion

Adverse effects of medication

These pertain to the unusual effects that are felt by the patient upon taking the medication, some adverse effects are vomiting, dizziness, headache, and itchiness the said examples of adverse effects are experienced by the patient upon taking the medication and it was also observed by the researcher upon conducting an interview.

KI 1: *"nasa amin pa rin yong palaging nahihilo tas nanghihina yong katawan"*
(We still felt dizziness and weakness)
KI 2. *"yong 6 months na ko, kumikirot yong leeg ko"*
(even at 6 months of medications, still I felt the pain in my neck)
KI 3. *"hindi ko mainom yong gamut ko kasi tumataas yong sugat ko at yong uric acid ko"*
(I was not able to take my medication due to my elevated uric acid level)
KI 4. *"Iyong first at second month ko, nahihilo po ako at nasusuka, walang ganang kumain"*
(During my first and second month of medication, I still felt the urge to vomit and I have no appetite)
KI 5. *"Iyong unang month ko, titigil na sana ako kasi masakit lalo na yong injection, araw-araw kasi yon"*
(on my first month, I'd like to stop my medication especially the injection, I cannot tolerate the pain)

Awareness of medical programs

The medical program being discussed here is the program offered by the Department of Health such as Directly observed therapy short-course chemotherapy that is being offered for the patient who is diagnosed of pulmonary tuberculosis, this program lasted for 6 months, as the patient becomes resistant to any of the medication given in the DOTs treatment (which is common is rifampicin and isoniazid) patient then become a multi-drug resistant; these pertained to the resistant to either any of the drugs given during DOTs treatment, therefore patient in multi-drug

resistance will undergo 18 to 20 months of treatment. The majority of the informants are aware of the said medical programs. All of them stated the length and duration of the program. Respondents are also aware of their medication process and other programs such as DOTs.

KI 4. *"Iyong sinabi naman, mag-exercise, kumain ng masustansyang pagkain, araw araw pumunta sa center para mainum yong gamut at makuha yong injection"*
(we were told to exercise, eat nutritional food and visit the center every day to avail our medications)

KI 2. *"Ang pagkakaintindi ko yon, pinapagaling kami"*
(As far as I understood it, it helps us to be cured)

KI 1. *"bumalik ako sa center sa barangay naming, tapos nirefer na nila ako dito"*
(I went back to our barangay health center and I was referred to rural health unit)

KI 4. *"Dati na rin ako nag-gagamot, tas huminto na ko. Iyong doctora dito, pinuntahan ako sa bahay naming"*
(I stopped taking my medication and the rural health unit physician pay me a visit at home)

Process of identifying Multi-Drug Resistance Patients

These pertain to the process of identifying a multi-drug resistant patient and the laboratory examination that the patient underwent to attest that they are resistant to the medication and positive for multi-drug resistance. Laboratories are compulsory in the satellite center, according to the nurse on duty who is also the gatekeeper, the patient is required for sputum examination every month, x-ray and even HIV testing with the help of their gene Xpert. The laboratory is for free according to the informants as well. The majority of the informants underwent an x-ray and sputum test prior to their diagnosis. Respondents also stated that they underwent sputum examination every month. Respondents also stated that prior to their diagnosis they underwent blood extraction to assess the medicine resistance and for a confirmatory test.

KI 5. *"Pinatest yong plema ko, nung lumabas na yong resulta ng plema ko, sinabi nga na MDR na ko"*
(the result of my sputum test was I was already resistant medications)

KI 6. *"Pina- x-ray ako, nung una pneumonia lang daw, tas na test din yong plema ko saka nalaman na MDR ako"*
(I was asked for an x-ray test and sputum test, it turned out to be positive of resistance to medications)

KI 2. *"Kinunan ako ng dugo, na x-ray at may sputum exam kami dito every month"*
(we underwent blood extraction, sputum and x-ray test every month)

KI 7. *"Nag take na kasi ako ng DOTs dati, 6 months yon, natapos ko yon… after 4 years bumalik yong pag ubo ko at nanghihina na ko, walang gana kumain tas nagpacheckup ako, ang sabi bumalik daw yong sakit ko, tinest ako nakita nila na may resistance ako sa rifampicin"*
(I was already under DOTs therapy for 6 months, after 4 years my illness relapses, I had cough and weakness and loss appetite after examination it turned out that my illness recurs)

KI 6. *"X-ray result ko pneumonia, tapos iyong sputum ko positive PTB nga, tapos ko mag DOTs ng 6 months, bumalik ang sabi resistant na daw ako sa gamot kaya ngayong sa18-20 months na daw ang gamutan ko, Kanamycin na ngayon dati kasi rifampicin eh di na daw tinatanggap ng katawan ko"*
(after 6 months of DOTs I had resistance to rifampicin now I am taking Kanamycin instead. My x-ray result was pneumonia but I have a positive sputum result)

Willingness to undergo treatment

These pertain to the willingness of the patient to pursue the program and their motivation. It was stated by one of the informants that some of their co-patient sadly stopped taking the program and medication due to its adverse effect and the lack of family support. The majority are willing to finish what they have started despite the undesirable effects of the medication. Their perseverance is shown on the length of their medications. It is observed and seen by the researcher on their attendance booklet.

KI 1.*"Tiis lang talaga, kung gusto mo gumaling"*
(if you want to be cured, you have to persevere)
KI 2. *"Dati nahina yong katawan ko, walang ganang kumain. ngayong nakakabawi na ang katawan ko te"*
(before I have body weakness and I loss appetite at least now I am feeling better already)
KI 4. *"Masakit pero tiis lang talaga para gumaling"*
(it really hurts but I have to endured the pain to get well)
KI 5. *"Tapusin ko lang daw ang injection dito, tinanong ko kasi si nars kung may ganitong gamutan sa Davao, sabi niya mayron daw, dun ko nalang itutuloy yong tablet bastat na tapos ko muna yong injection dito"*
(I have to finish my injection before I can transfer to Davao and continue my medications there according to the nurse in-charge).

Creating relationship between Multi-Drug Resistance patients

These pertain to the ability of the patient to socialize with their co-morbid patient. it was stated below that patients build a strong relationship with their co-patient and it was also observed by the researcher during the interview and upon validation of the interviewee documents. During validation, patients are discussing their upcoming event, they are about the celebrate a late Valentine party and they are assigning each one of them for the potluck to bring on the said event. The researcher validated the event to the gatekeeper according to her, patients are allowed to organized such events for socialization purposes especially when they have a newcomer or a new member of the multidrug resistance program as if a welcome party to all. The majority of the informants find comfort to their co-morbid, especially when family support is unavailable, they encouraged their co-morbid to attend the program and refrain from being absent according to them, this is their means to lessen their depression through talking and sharing experiences to their co-morbid.

KI 3. "Nakahanap ako ng mga kaibigan dito"
(I found new friends here)
KI 2. "Para ko na rin silang kapatid"
(they are like my siblings)
KI 6. "Yan, si bakla at si ate buntis at si nars ang sinabihan ko lang sa kondisyon ko"
(there are only 3 persons who knew my conditions)
KI 7. "Para na rin kami magkakapatid dito, eh pare-pareho nga kami ng sakit di ba?"
(we are like siblings here since we also have the same condition)
KI 5. "Pag may sumusuka, at okay pa naman ako. ayan aalalayan ko o kaya yong iba sila ate dyan..lalo na pag medyo baguhan palang"
(Whenever I'm still okay and able to assist my co-morbid, I assisted them especially the new members)

The majority of the informants stated that they find the close relationship among their co-patients. They become attach and

comfortable with their co-patients since they are in the same medication regimen. Some of them provided encouragement and emotional support to their co-patient as stated above.

Impact of treatment to Multi-Drug Resistance patients

These pertain to the inability of the MDR client to be productive, and unable to support their family. Upon interviewing the informants and hearing their responses it was obvious that they are unable to assume their daily living due to the side effects of the medications. From the researcher's point of view, it attributes their feeling of depression. Becoming a part of this program consume their entire day of suffering from the adverse effects of the medications as it was stated by the respondents. Being unproductive and unable to do their normal daily activities affects their sense of worthiness and it has a major impact on their perspective and it also affects their health due to depression and stress. The majority of them were felt that they are worthless in terms of their role in the family. They are eager to finish the program to get back to their normal life, a life wherein they can continue supporting their family, become useful and productive. This is one of the motivations that the informants are holding on to get back to their normal activity and be productive. Even in normal life, if a person becomes unable to assume their daily normal task it affects his/her perspective and damages his/her self-esteem, the same thing happened to the informants. The impact of this treatment on MDR clients has a major effect such as the feeling of worthlessness. These manifested as they continued crying during the interview. Certainly, the majority are the breadwinner of their family. They are the ones who supported their loved ones and it is a burden for them knowing that they are no longer able to do so due to their current condition. Most of them become jobless, and dependent on their other relatives, feeling of despair arose among the respondents it was observed and heard by the researcher during the interview.

KI 7. *"Nagresign ako sa work ko dahil nga sa araw-araw nag-gagamot ako at yong epekto buong araw"*
(Due to my medication which is every day and the side effects that lasted the entire day, I had to resigned from my work)
KI 4. *"Pag sa jeep ako, nag mamask ako, hindi ko lang sinasabi syempre yong kondisyon ko pero iwas na rin makahawa sa iba"*
(whenever I am in a public transportation, I wore my mask but of course I don't have to explain to everyone why am I wearing mask right?)
KI 5. *"Tinatanong ko nga ang sarili ko bakit ako pa? Eh ako lang ang tumutulong sa mama ko at kapatid ko, ngayon wala akong trabaho"*
(I kept on asking myself, why it happened to me of all people…I am the breadwinner of my family and now I am jobless)
KI 7. *"Buong araw kasi ang epekto nga gamut, suka ng suka at nanghihina..yong mother ko nga ang nag-aalaga sa baby ko eh"*
(the adverse effects of the medication lasted for the entire day, frequent vomiting and weakness occur the entire day…as of now, my mother is the who took care of my baby)
KI 6. *"gusto ko man magtrabaho hindi naman pwede kasi buong araw hinang-hina ka at nahihilo, nahihiya na nga ako umasa sa kapatid ko siya kasi ang sumusuporta ngayon sa amin kasi di na ako makapanahi"*
(I'd like to help my brother because he is the one who is supporting me and my family right now, but I wasn't able to do so due to the adverse effect of this medication)

The majority are no longer productive, either they resigned from their previous job or they are unable to resume their duties due to their current condition and the side effects of the medication. Most of them felt helpless in terms of productivity and supporting their family and has low self-esteem due to the inability to resume their duties and responsibilities.

Satisfaction of Multi-Drug Resistance patients with health workers and medical program

These pertain to the positive impact of the program on the informants. It was stated by the respondents that they are fully satisfied with the service of the health workers in the unit and the program has a huge help to them for their wellness. It was also observed during the interview that the said satellite is fully equipped and supplies are available for the patients on the program. Being financially provided by the program will lessen the financial burden of the client in attending the medication every day.

KI 3. *"Malaking bagay itong libreng gamutan, may gamut na kami nakakatanggap pa kami ng allowance, nagagamit ko yon sa pamasahe, yong iba sa kuryente at renta ng bahay tapos may 2 kilo pa ng bigas..ulam na lang ang binibili"*
(This program is beneficial to us, aside of its free medications,we are provided some financial assistances which we can use for transportation and for personal use.)

KI 2. *"Mabait siya, at inaadvice niya ako pag may problema ako sinasabi ko sa kanya"*
(I was able to discussed my personal issues to the nurse and she gives me advices when I need it.)

KI 5. *"Mababait sila at maentertain silang tao"*
(She's a good person, and good at entertaining us)

KI 4. *"Mababait po sila, lalo na yong nars namin marunong siyang makisama"*
(They are good, especially the nurse in-charge to us)

KI 5. *"Kumpleto ang supplies namin dito, may allowance pa kami every 6 days bali 900 nakukuha namin every 6 days at may 2 kilo ng bigas araw araw."*
(We have a complete supply here at the Center plus we are provided with financial assistance amounting to 900 and 2 kilos rice everyday)

Research Simulacrum

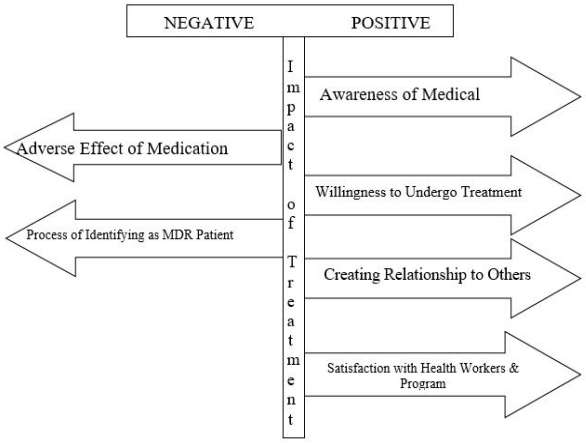

Figure 1. Two-Way Direction Eidetic Symbol of the Meaning of Life-World of Multi-Drug Resistant Clients.

Eidetic Insight

The eidetic figure symbolizes the struggles of Multi-Drug Resistant Clients as they continue to maintain their lifestyle after diagnosed with the said condition. Considering that positive and even negative insights arise as they move on towards achieving quality life; hence, the symbol represents the different direction as part of their life journey. The right-side arrows symbolize its positive experiences after they are found as Multi-Drug Resistant

Patients. The Awareness of Medical Program depicts the knowledge of these patients regarding their guidelines and their procedures. As verbalizes on their themes, their positive views on this, they will become okay once they will undergo the treatment program; thus, they are willing to be a part of it. Another theme emerge is creating a relationship with others. Most of the MDR clients are having stigma once they are diagnosed with this condition and somewhat need emotional support. According to them, they found true family and friends that ties their bonding amidst their state. Support from them gives them more strength to continue their daily life after this devastating moment happens to them. Not just actually their family and friends that stay with them, even the health workers also give their utmost care for them. As part of their responsibilities, patient satisfaction is one of their priorities; hence, they always see to it that they are complying with the treatment through diligent and altruistic efforts the health workers for them maintain quality of life.

On the one hand, the impact on the MDR client reflects a two-faced direction. Some of them view their role and their stand with a positive set of minds. While the other side, they found it as a battle-ax to continue their precious life which considered a negative impact; hence, this theme was put at the midline of the reflection which bound as the neutral effect of the client who is having multi-drug resistant condition.

On the other hand, negative effects arise with them; hence, the left side arrows represent those themes. One of them is the process of identification as an MDR patient. Some of them claimed that they were in a state of shock as their physician revealed their condition and supported by laboratory works. As they stated, they underwent the six months directly-observed treatment for tuberculosis and expecting to be cured but then again, they are still failed to achieve a remedy. Therefore, they see it as an insuperable burden to them wherein there is no turning back to their normal life as resembles by their statements of being resigned to their job and even neglecting their previous daily routines and activities. Lastly, as part of the negative side of an emerging theme is the adverse effect of medication. Most of them claimed that they experienced adversities when it comes to the treatment of medications. Some of them revealed that they still experienced it even when they are at home which reflects an insurmountable process and acceptance as part of their life.

Discussions

Most of the informants revealed their insights regarding their experience under the care of a control program for MDR clients. It was noted based on their stories some of the dreaded consequences once you will become MDR which can lead to formation risks to themselves and families. As they combat their condition, it further denotes that compliance is still the key to their condition. According to Chuchottaworn, Thanachartwet, Sangsayunh, Than, Sahassananda, Surabotsophon, et al. (2015), there are limited data available on the risk factors for multidrug-resistant tuberculosis (MDR-TB). As such, clinical factors and chest radiographic findings associated with MDR-TB among patients with pulmonary TB may help physicians to provide proper management of cases for prevention of the development and spread of MDR-TB in the future. On the assessment of Ullah, Javaid, Tahir, Ullah, Shah, Hasan, et al. (2016), the major risk factor for the development of drug-resistant TB was the history of previous TB treatment. This fact emphasizes the need for properly functioning TB Control Program with strict supervision of patients ensuring compliance and completion of treatment. MDR-TB was present five times higher in previously TB treated as compared to newly

diagnosed patients. Moreover, the early age group 10–25 years was considered to be most affected both in males and females with MDR-TB. According to Qadeer, Fatima, Fielding, Qazi, Moore, and Khan (2015), the use of good quality, locally procured drugs can be effective in treating MDR-TB, may involve lower costs than using international quality assured (IQA) drugs and could strengthen developing country drug quality assurance systems. This may be a suitable alternative instead of or whilst awaiting the arrival of internationally procured medicines. On the other hand, Lalor, Greig, Allamuratova, Althomsons, Tigay, Khaemraev et al. (2013), studied the factors associated with death that were largely related to the severity of disease at initiation of treatment. The association between default and re-treatment after previously defaulting shows the importance of success with the first regimen of TB treatment offered to a patient. Patients who had previously defaulted were at increased risk of not only subsequent default but also of death. As cited by Patle and Khakse (2014), tuberculosis is an ancient global public health problem. In India despite persistent government efforts in the form of the Revised National Anti-Tuberculosis Program (RNTCP) and Directly Observed Treatment Strategy (DOTS), TB remains a major cause of mortality and morbidity. It is very important to have a thorough knowledge of the disease when one is intended to treat it. As supported by Hwang and Keshavjee (2014), Multidrug-resistant tuberculosis (MDR-TB) is a leading public health concern, particularly in low- and middle-income countries, necessitating coordinated international action to prevent its spread and effectively treat the infected. The cost of treatment for MDR-TB is over 200 times the comparable cost for drug-susceptible tuberculosis (TB) patients. To achieve the goal of eradicating MDR-TB, policymakers should implement a two-pronged intervention that pools donor resources for the coupling of market-oriented solutions to MDR-TB drug prices and targeted investments in health systems strengthening and innovative care delivery models. Further, Baral, Aryal, Bhattrai, King, & Newell (2014), said that MDR-TB-National Tuberculosis Programs should consider incorporating financial support and counseling into MDR-TB care: costs are low, and benefits high, especially since costs to society of incomplete treatment and potential for incurable TB are extremely high.

Conclusion

The results unveil that majority of informants exhibit low self-esteem since stigma exists despite thorough dissemination of information to the public regarding this condition. But somehow, satisfaction still appears among respondents probably because it lengthens their lives. As they point-out, instead of discriminating these clients, understanding, encouragement, comfort, and motivation from the community and especially family members should be provided. More so, the implementation of the MDR control program must be strengthened in order to deliver a dignified treatment among clients rather than imprisoning them in this condition.

References

Baral, S. C., Aryal, Y., Bhattrai, R., King, R., & Newell, J. N. (2014). The importance of providing counselling and financial support to patients receiving treatment for multi-drug resistant TB: mixed method qualitative and pilot intervention studies. *BMC public health, 14*(1), 46.

Calmorin L.P. and Calmorin M.A. (2007), *Research methods and thesis writing* 2nd Edition, Rex Bookstore. Manila. 400pp.

Chuchottaworn, C., Thanachartwet, V., Sangsayunh, P., Than, T. Z. M., Sahassananda, D., Surabotsophon, M., & Desakorn, V. (2015). Risk factors for multidrug-resistant tuberculosis among patients with pulmonary tuberculosis at the Central Chest Institute of Thailand. *PLoS One, 10*(10). doi: 10.1371/journal.pone.0139986

Cuevas et al. (2007). *Public Health Nursing in the Philippines.* National league of Philippine Government of Nurses.

Duan, Q., Chen, Z., Chen, C., Zhang, Z., Lu, Z., Yang, Y., & Zhang, L. (2016). The prevalence of drug-resistant tuberculosis in mainland China: an updated systematic review and meta-analysis. *PLoS One, 11*(2). doi: 10.1371/journal.pone.0148041

Department of Health (2014). *National Tuberculosis Manual of Procedures 5th Edition.* Available at https://www.doh.gov.ph/sites/default/files/publications/MOP_Final_a.pdf

Hwang, T. J., & Keshavjee, S. (2014). Global financing and long-term technical assistance for multidrug-resistant tuberculosis: scaling up access to treatment. *PLoS medicine, 11*(9). doi: 10.1371/journal.pmed.1001738

Lalor, M. K., Greig, J., Allamuratova, S., Althomsons, S., Tigay, Z., Khaemraev, A., ... & du Cros, P. (2013). Risk factors associated with default from multi-and extensively drug-resistant tuberculosis treatment, Uzbekistan: a retrospective cohort analysis. *PLoS One, 8*(11). doi: 10.1371/journal.pone.0078364

Orte, C. J. S., & Bautista, R. A. Echoing Difficulties of Student Nurses at Various Clinical Areas in the Hospital through Doodling. *The Upland Farm Journal, 25* (1). 97-104.

Patle, R. A., & Khakse, G. M. (2014). Knowledge about tuberculosis and multi-drug resistant tuberculosis among interns. *Natl. J. Community Med, 5*, 51.

Polit and Beck (2012). *Nursing research; Generating and assessing evidence for nursing practice* 9th edition. Lippincott, London.

Qadeer, E., Fatima, R., Fielding, K., Qazi, F., Moore, D., & Khan, M. S. (2015). Good quality locally procured drugs can be as effective as internationally quality assured drugs in treating multi-drug resistant tuberculosis. *PloS one, 10*(4). doi: 10.1371/journal.pone.0126099

Ullah, I., Javaid, A., Tahir, Z., Ullah, O., Shah, A. A., Hasan, F., & Ayub, N. (2016). Pattern of drug resistance and risk factors associated with development of drug resistant Mycobacterium tuberculosis in Pakistan. *PloS one, 11*(1). doi: 10.1371/journal.pone.0147529

Yin, J., Yuan, J., Hu, Y., & Wei, X. (2016). Association between directly observed therapy and treatment outcomes in multidrug-resistant tuberculosis: a systematic review and meta-analysis. *PLoS One, 11*(3). doi: 10.1371/journal.pone.0150511

Zhang, C., Wang, Y., Shi, G., Han, W., Zhao, H., Zhang, H., & Xi, X. (2015). Determinants of multidrug-resistant tuberculosis in Henan province in China: a case control study. *BMC Public Health, 16*(1), 42. https://doi.org/10.1186/s12889-016-2711-z

Knowledge,Attitude and Practices of Oral Health among Special Education Elementary School Teachers in CALABARZON Region, Philippines

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Abstract

The Elementary school teachers play a key role in imparting oral health education to school-aged children. They seemingly act as a bridge that helps strengthen the oral hygiene practices of these children. However, for the children to emulate good oral hygiene practices, their teachers need to not only have sound oral health knowledge but also a positive attitude towards oral hygiene and outstanding oral health practices. In CALABARZON region of the Philippines, the knowledge, attitude and practice of oral health hygiene among elementary school teachers catering to special needs children is yet unstudied. The present study was conducted to determine the oral health knowledge, attitude, and practices of special education elementary school teachers in CALABARZON. The relationship of these variables was also determined. This study employed a descriptive and correlational research design. A total of 110 special education elementary school teachers from 5 provinces in the CALABARZON region were conveniently sampled. A self-constructed questionnaire was utilized to collect data on teachers' demographic characteristics, education level, teaching experience as well as knowledge, attitudes, and practices of oral health hygiene. Descriptive and inferential statistics were used in the interpretation of the data. Results revealed a high level of knowledge, a positive attitude and good oral practice. There was no significant correlation between the oral health knowledge and attitude as well as oral health knowledge and oral health practice. However, a weak positive significant relationship was found between oral health attitude and oral health practice. It is therefore recommended that the teachers' existing oral health knowledge be improved through frequent oral health seminars catered to by either the local government or organizations. Also, reinforcement programs regarding changing the oral health knowledge into practice is to be evaluated and fortified.

Keywords: *Saccharum spontaneum Linn, reformulation, characterization, accelerated stability testing (study), anti-inflammatory activity*

Elementary school teachers play a key role in imparting oral health education to school-aged children. They act as a bridge that helps strengthen the oral hygiene practices of these children. However, for the children to emulate good oral hygiene practices, their teachers need to not only have sound oral health knowledge but also a positive attitude towards oral hygiene and outstanding oral health practices.

Children are generally subjected to more sugary foods compared to adults. As a result, they develop dental caries and gum diseases at an early age without proper care. This may lead to skipping classes, difficulty in biting or chewing, decreased nutritional intake and a poor quality of life (Tikare & AlQahtani, 2017). Learning centers should ensure that the administrators and teachers, especially primary school teachers are well-educated on oral health issues. The primary school teachers can play an important role in developing healthy habits in their students (Dayanand et al., 2017).

Oral health is a state of being free from

chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal disease, tooth decay and tooth loss, and other diseases and disorders that affect the oral cavity (Nur-E-Saud et al., 2016). The World Health Organization (WHO) conducted a study in 2016 that estimated oral diseases to have affected at least 3.58 billion people worldwide, with caries of the permanent teeth being the most prevalent of all conditions assessed.

However, globally, it is estimated that 2.4 billion people suffer from caries of permanent teeth and 486 million children suffer from caries of primary teeth (Lancet, 2016). In the Philippines, dental caries and periodontal diseases are the two most common oral health diseases affecting Filipinos. Statistical analysis done by the Department of Health (DOH, 2011) shows that 87.4 % of Filipinos are suffering from dental caries while 48.3 % have gum disease

The World Health Organization in 1995 propelled a worldwide school wellbeing program that tried to activate and reinforce wellbeing advancement and training exercises at the neighborhood, national, local, and worldwide levels (WHO, 1995). This program was intended to improve the soundness of students, school faculty, families, and different individuals from the network through schools. In the Philippines, the DOH has likewise propelled an oral wellbeing program to expand the extent of orally fit kids under 6 years of age to 12% from 20% by 2020 (DOH, 2011).

Over the years, the promotion and education of oral health have become an important responsibility of school-teachers. However, this responsibility also carries certain disadvantages. As indicated by Dayanand et al. (2017), one of the impediments is that a teacher might be inadequately prepared to convey oral wellbeing training in classrooms. The absence of preparing on parts of oral health has appeared to keep educators from taking part in teaching children successfully.

A student is usually thought to be trained with the aim of exceeding their teacher or mentor. However, the teacher's knowledge on the subject matter needs to be well rounded and profound so that the information passed down to the mentee is better if not the best. In this case, for children in special education primary or elementary schools to have good oral health knowledge, attitudes and practice, the teachers need to have positive oral health attitudes and good oral health behaviours.

Mota et al., (2016) directed an examination that demonstrated instructors to have inadequate oral wellbeing information, unseemly oral practices and negative ways to deal with childrens' oral wellbeing. In any case, an investigation by Ahmad (2015) uncovered that elementary teachers had excellent oral wellbeing information and mentalities, yet more was to be done to improve their current knowledge.

In CALABARZON region of the Philippines, the knowledge, attitude, and practice of oral health hygiene among elementary school teachers catering to special needs children are yet unstudied. Therefore, this study determined the oral health knowledge, attitude, and practices of special education elementary school teachers in CALABARZON.

The general objective of this study was to determine the oral health knowledge, attitude, and practices of special education elementary school teachers in CALABARZON, Philippines.

This study specifically answered the following questions:

1. What is the level of oral health knowledge of the teachers?
2. How do the teachers perceive their attitude on oral health?
3. What is the extent of practice on the oral health of the teachers?
4. Is there a significant relationship between

the oral health knowledge and practices of the teachers?

5. Is there a significant relationship between the oral health attitude and practices of the teachers?

Review of Literature

Oral Health Knowledge

Oral disease among children with special needs presents major oral health problems mainly due to the incapacity to perform oral hygiene practices like all abled individuals. The prevalence and severity of oral disease among this group is higher when compared to the general population. Poor periodontal health and oral cleanliness have been observed in children with disabilities (Altun et al., 2010). Children with disabilities may face challenges understanding the importance of oral health care while most may have problems explaining themselves or find it difficult to convey their oral needs to dental professionals, parents, caregivers or teachers. Poor oral hygiene and dental disease may be more prevalent in patients with disabilities because of their condition and medication on the oral environment. Malocclusion and teeth with developmental defects, oral habits such as pouching of food, and even poor physical coordination contribute to poor oral hygiene. Some patients cannot grasp a toothbrush or reach their mouth; their lack of ability for self–care may have serious health implications (Jaccarino, 2012).

The most common contributing factors to oral health are dental caries and gum bleeding. Dental caries is an oral infection that may be linked to frequent vomiting or gastroesophageal reflux, less than normal amounts of saliva, medications containing sugar, or special diets that require prolonged bottle-feeding or snacking. When oral hygiene is poor, the teeth are at an increased risk for caries (National Institute of Dental and Craniofacial Research, 2016). The knowledge of dental caries among teachers in elementary schools varies based on their geographical location. In Brazil, for example, Maranhão et al. (2014) assessed the knowledge and attitudes of primary school teachers toward dental health education in Maceió. The study revealed that teachers had an unsatisfactory level of knowledge about the aetiology of caries. Secondly, 90% reported sugar as responsible for the caries process and only 3.6% reported that its excessive consumption is responsible for the emergence of the disease.

In contrast Dayanand et al. (2017) conducted a study that assessed knowledge, attitudes, and practices of schoolteachers toward oral health in Davangere, India. This study yielded results that showed 36% of teachers had concluded that irregular brushing causes decay, 14.7% contributed for gum diseases, 16% of teachers concluded that it would lead to bad breath, and 16.7% concluded that irregular brushing causes stains on teeth. Only 17.3% concluded that all the factors are caused by irregular tooth brushing. About 23.3% of teachers concluded dental problems are due to eating sweets and ice creams. About 58% of teachers agreed for improper brushing. Only 1.3% of teachers concluded that dental problems are due to not visiting the dentist regularly and rinsing the mouth.

Oral Health Attitude

Most often, people build opinions or attitudes toward something through what they know, feel, think, or believe. Attitudes toward oral health are mainly developed through what children are taught in school, what they are told at home, and sometimes what they experience first-hand at the dentist. Having an all-round experience towards oral health services and education may help in developing better attitudes toward oral hygiene. Children

spend considerable time in school especially during the age when their habits are being formed. Hence, the role of teachers during these developmental stages of the child is critical. It is now established that school teachers have an internationally recognized potential role in school-based dental education and considerable importance has therefore been attributed to their dental knowledge (Sgan-Cohen et al., 1999).

In the study oral health knowledge, attitude, and approaches of pre-primary and primary school teachers in Mumbai, India, Mota et al. (2016) discussed several studies that revealed distinctions in teachers' attitudes towards oral health. The first two studies were surveys conducted in Minnesota, USA, among future schoolteachers and Michigan, USA, among elementary school teachers. These studies suggested that oral health knowledge of teachers was often inadequate and inaccurate. They were ill-informed and held inconsistent opinions about basic oral health-related concepts. Likewise, another study was conducted among government primary school teachers in a rural part of India. It concluded that oral health knowledge was lacking among the teachers.

Since developing an attitude toward something is usually formed through what people know, feel, think or believe, many ignore their oral health and oral hygiene leading to negative attitudes toward oral health due to fear. This usually causes situations whereby a tooth could have likely been saved but ends up being extracted which nevertheless is still a painful process (Singh et al, 2013).

Practices on Oral Health

Oral health is essential to general health and quality of life. It is a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing (WHO, 2018). Dayanand et al. (2017) conducted a study on the knowledge, attitude and practices schoolteachers in Davangere, India. On practices of oral health, they found that all the teachers used toothbrush and toothpaste to clean their teeth. Around 34% of teachers brushed their teeth once daily and 66% do brush twice daily. The results also revealed that 60% of teachers changed their toothbrush once in 3 months, 28% changed their toothbrush once in 6 months, and only 12% teachers changed their toothbrush when bristles get frayed up. All teachers 100% cleaned their tongue, 68% used tongue cleaner, 28% used a finger to clean their tongue, and 4% did use a toothbrush to clean their tongue. About 95.3% of teachers did know about oral hygiene aids and 4.7% did not know about other oral hygiene aids. Among 95.3% teachers, 72.6% used mouth¬wash as oral hygiene aid, 13.3% used dental floss, and only 14% used a toothpick as oral hygiene aid.

The encouraging fact about oral health is that despite the high occurrence of oral diseases, many of these problems can be prevented. Toothbrushing and flossing are the main preventive methods deemed to be effective for plaque removal and is generally more acceptable to children and adults (Isman et al., 2000).

Interdental cleaning usually comes first before toothbrushing. This helps remove debris that collects between the spaces of teeth. Dental floss helps clean these hard to reach tooth surfaces and reduce the likelihood of gum disease and tooth decay. The American Dental Association recommends brushing the teeth twice a day for two minutes using fluoride toothpaste (Creeth, 209).

Brushing for two minutes has been shown to achieve clinically significant plaque removal and use of a toothpaste containing fluoride

enhances fluoride concentration levels in biofilm fluid and saliva and is associated with decreased risk of caries and remineralization of teeth (Newby et al., 2013). Brushing before bedtime is important to prevent plaque and food particles remaining in contact with the teeth throughout the night. Aside from brushing, tongue cleaning regularly is highly recommended to control halitosis through the removal of the tongue coating by reducing bacteria growth on the tongue (Lawande & Lawande, 2013).

Another preventive method that barely receives enough emphasis is the value of having a balanced nutritional diet. The WHO (2018) states that having an unhealthy diet and poor nutrition affects the teeth and growth of the jaws during development and later during the life-course. The most significant effect of diet is in the mouth, particularly is the development of dental caries. Children and adults are strongly recommended to reduce daily intake of free sugars to less than 10% of total energy intake and a further reduction to below 5% of total energy intake would protect oral health throughout the life course. Also, adequate exposure to fluoride should be promoted to prevent dental caries

A balanced diet is one that contains fresh fruit and vegetables rich in vitamins and minerals. The Food and Nutrition Research Institute in 2015 found out that the Filipino diet is particularly deficient in fruits and vegetables but high in energy intake from fats, sugars and carbohydrates. By eating a variety of food, people make certain there is an adequate source of nutrients for optimum health.

Methodology

This study utilized a Quantitative Research design while employing a descriptive-evaluative, descriptive-comparative, and descriptive-correlational research designs. The respondents of this study were 110 special education elementary school teachers in5 provinces in CALABARZON; chosen through random sampling.

Among the 110 respondents, 66 (60%) were between the age group of 20 – 30 years, 22 (19.8%) were between the age of 31 – 40 years, 9 (8.1%) were between the age of 41 – 50 years, 9 (8.1%) were between the age of 51 – 60 years and 4 (3.6%) were 61 years old and above. This showed that more than half of the respondents fell under the age group of 20 – 30 years, followed by respondents under the 31 – 40 years. Respondents under the age group of 41 – 50 years and 51 – 60 years showed similar frequencies. While the least number of respondents were under 61 years old and above. Ninety (81.8%) out of the 110 respondents were female and 20 (18.2%) were male. This indicated that there were more female respondents than male respondents. In the world today this can be seen to be the norm whereby teaching is dominated by female teachers. Based on the population sample, 84 (76.4%) of the respondents had a bachelor's degree in education while 26 (23.6%) of the respondents had a master's degree. However, some of the respondents with bachelor's degrees had enrolled for master's programs at the time of data collection. The distribution of respondents in terms of teaching experience showed that 57 (51.8%) had at least 0 – 5 years of teaching experience, 27 (24.5%) had 6 – 10 years of teaching experience, 13 (11.8%) had 11 – 15 years of teaching experience and 13 (11.8%) had about 15 years or more of teaching experience. This indicated that more than half of the respondents fell within 0 – 5 years of teaching experience, followed by respondents within the 6 – 10 years of teaching experience. Respondents with 11 – 15 years of teaching experience and 15 years or more showed to have the least numbers of teaching experience.

Through a self-constructed 4-part questionnaire, data on the repsondents' profile,

knoweldge, attitude, and practices on oral health hygiene were gathered. Moreover, questionnaire was validated by experts and has gone through a pilot test prior to data gathering. A clearance from the Ethics Review Board of the University was also sought. Descriptive and inferential statistics were used in the interpretation of the data.

Results and Discussion

Level of Oral Health Knowledge

Table 4 displays the frequency and cumulative percentages of the respondents' answers to the oral health knowledge questions. The frequency distribution showed the majority of the respondents answered the questions correctly for each question. A total of 109 (99.1%) respondents answered yes for questions six, seven, ten, eleven, twelve and thirteen had while 1(0.9%) answered no. Question five showed a relative difference in the level of knowledge with 83 (75.5%) respondents who answered yes and 27 (24.5%) who answered no.

Table 1
Respondents' Level of Oral Health Knowledge

Items	Frequency (Yes)	Cum %	Frequency (No)	Cum %
1. Poor oral hygiene leads to dental caries or tooth decay.	107	97.3	3	2.7
2. Eating sweets or sugary food contributes to a poor oral condition	107	97.3	3	2.7
3. A child with a disability is at a higher risk for gum disease	90	81.8	20	18.2
4. Bacteria in the mouth can cause gum bleeding	105	95.5	5	4.5
5. Gum disease is linked to general body conditions such as diabetes, heart disease or stroke.	83	75.5	27	24.5
6. Brushing teeth is effective for removal of food debris on teeth.	109	99.1	1	0.9
7. Brushing teeth is done twice to three times a day with nighttime as the most important time.	109	99.1	1	0.9
8. Brushing teeth is performed for 2 minutes.	102	92.7	8	7.3
9. Fluoride is a component in some toothpastes.	108	98.2	2	1.8
10. Fluoride prevents the early stages of tooth decay.	109	99.1	1	0.9
11. Fluoride helps teeth resist acid produced by bacteria in the mouth when you eat sugary foods.	109	99.1	1	0.9
12. Eating a balanced diet helps keep the mouth healthy.	109	99.1	1	0.9
13. A balanced diet contains fresh fruit and vegetables rich in vitamins and minerals.	109	99.1	1	0.9
14. Limiting the amount of snack eating throughout the day can cause less harm to teeth.	97	88.2	13	11.8

Legend: N = 110 respondents, Cum. % = Cumulative percent

Table 2 shows the mean and standard deviation for each question. Questions six, seven, ten, and eleven had the highest mean of 0.99 while questions twelve, five, and three had

the lowest means of 0.00, 0.75 and 0.82, respectively. It also shows the overall mean of the respondents' level of knowledge 12.21 (SD = 1.17). This indicates that the respondents who participated in the study had a high level of knowledge on oral health based on the mean scores. A mean of 1 – 3 indicates a very low level of knowledge, 4 – 6 indicates below average, 7 – 9 indicates average, 10 – 12 indicates high, 13 – 14 indicates very high.

Table 2
Respondents' Level of Oral Health Knowledge

Items	Mean	SD	Verbal Interpretation
1. Poor oral hygiene leads to dental caries or tooth decay.	0.97	0.16	
2. Eating sweets or sugary food contributes to a poor oral condition	0.97	0.16	
3. A child with a disability is at a higher risk for gum disease	0.82	0.39	
4. Bacteria in the mouth can cause gum bleeding	0.95	0.21	
5. Gum disease is linked to general body conditions such as diabetes, heart disease or stroke.	0.75	0.43	
6. Brushing teeth is effective for removal of food debris on teeth.	0.99	0.10	
7. Brushing teeth is done twice to three times a day with nighttime as the most important time.	0.99	0.10	
8. Brushing teeth is performed for 2 minutes.	0.93	026	
9. Fluoride is a component in some toothpastes.	0.98	0.13	
10. Fluoride prevents the early stages of tooth decay.	0.99	0.10	
11. Fluoride helps teeth resist acid produced by bacteria in the mouth when you eat sugary foods.	0.99	0.10	
12. Eating a balanced diet helps keep the mouth healthy.	0.00	0.00	
13. A balanced diet contains fresh fruit and vegetables rich in vitamins and minerals.	0.98	0.13	
14. Limiting the amount of snack eating throughout the day can cause less harm to teeth.	0.88	0.32	
Overall Oral Health Knowledge	**12.21**	**1.17**	**High**

The findings of this study drew comparisons to previous studies conducted within the same scope; 97.1% of respondents in this study agreed that toothbrushing was done two to three times a day. Ahmad (2015) revealed that 68% of the respondents cleaned their mouth both morning and evening and a significant number of respondents had good overall knowledge of oral health.

Moreover, 97.3% of respondents in this study agreed that eating sweets or sugary food contributed to poor oral condition while 99.1% believed that brushing teeth was effective for removal of food debris on teeth. These results showed significant similarity to a study conducted Rasheed and Shetty (2017) where 96.7% of the respondents were aware that tooth brushing prevented dental decay and 99% responded that sweet affected dental health. Despite the variations in answers on the table above, the respondents had high oral health knowledge. Although more efforts could be made to further ensure that teachers pass down this knowledge to special needs children in schools.

Respondents' Level of Attitude

Table 3 shows the respondents' answers with regards to their level of attitude toward oral health. The table also shows the mean and standard deviation for each question. Questions five, four, and one in the questionnaire had highest mean of 3.81 (SD = 0.50), 3.74 (SD = 0.50) and 3.69 (SD = 0.46), respectively.

Based on the mean results, the answers mean that majority of the respondents had a positive attitude toward maintaining good oral hygiene as a personal and individual responsibility, recognizing that caring for their oral health was as important as caring for their overall body health and believing that poor oral health affected a child's eating due to pain or discomfort.

Table 3
Respondent's Level of Attitude

Items	Mean	SD	Scaled Response	Verbal Interpretation
1. I believe that poor oral health affects a child's eating due to pain or discomfort.	3.69	0.46	Strongly Agree	Positive
2. I believe that poor oral health affects a child's social appearance and self-esteem.	3.62	0.61	Strongly Agree	Positive
3. I believe that poor oral health affects a child's ability to communicate (speech) well.	3.47	0.63	Strongly Agree	Positive
4. I recognize that caring for my oral health is as important as caring for my overall body health.	3.74	0.50	Strongly Agree	Positive
5. I feel that maintaining good oral hygiene is my responsibility.	3.81	0.50	Strongly Agree	Positive
6. I find dental visits unpleasant.	3.22	0.79	Agree	Positive
7. I have held back from visiting the dentist because of fear of pain.	3.01	0.78	Agree	Positive
8. I find brushing teeth for 2 minutes to be too long.	3.17	0.74	Agree	Positive
9. I find that changing my toothbrush every three months is a waste of money.	3.43	0.81	Strongly Agree	Positive
10. I find eating a balanced diet to be expensive.	3.35	0.66	Strongly Agree	Positive
Overall Attitude Mean	**3.45**	**0.36**	**Strongly Agree**	**Positive**

Legend: 1.1 – 1.74= strongly disagree, 1.75 – 2.50 =disagree, 2.51 – 3.25 =agree, 3.26 – 4.00 = strongly agree

There is one item that shows low self-efficacy such as "I can manage to get/prepare and eat my breakfast, even if I have to struggle waking up early in the morning" with a mean of 2.49 and a standard deviation of .87. The result of this study agrees with the study of Zielińska-

Więczkowska (2016) which indicates that most of the respondents (62.8%) in their study scored high in self-efficacy. Self-efficacy beliefs influence goals and aspirations. The stronger the perceived self-efficacy, the higher the goals of an individual and the stronger their commitment to them.

People with high self-efficacy expect to have positive outcomes. Those of low self-efficacy expect their efforts to have poor outcomes (Zielińska-Więczkowska, 2016). Self-efficacy beliefs also evaluate how challenges and weaknesses are viewed. People of low self-efficacy easily believe the ineffectiveness of effort in times of difficulties. They easily quit trying. Those of high self-efficacy view difficulties as resolvable by the development of self-management skills and consistent effort (Bandura, 1977).

Contrarily, questions seven, eight, and six had the lowest mean of 3.01 (SD = 0.78), 3.17 (SD = 0.74) and 3.22 (SD = 0.79), respectively. Although the mean may be regarded as low, the scores still show a positive attitude toward visiting the dentist, tooth brushing and they did not find dental visits unpleasant. The overall mean of the respondents' level of attitude toward oral health was 3.45 (SD = 0.36) with a scale response of strongly agree and a verbal interpretation of positive.

In this study, majority of the respondents agreed that caring for one's oral health was as important as caring for the overall body health. A majority also felt that maintaining good oral hygiene was an individual responsibility. These findings were similar to Dayanand et al. (2017) where 100% of the respondents accepted the fact that maintenance of oral health was an individual responsibility.

The Extent of Oral Health Practice of Respondents

Table 4 displays the respondents' answers with regards to their oral health practice based on mean scores. Questions one, two, and six had the highest mean of 4.94 (SD = 0.31), 4.85 (SD = 0.43), and 4.75 (SD = 0.56), respectively. The results revealed that majority of the respondents always practice toothbrushing with the use of a toothbrush, brushed their teeth at least two to three times a day and used a toothpaste containing fluoride.

The table also presented questions five, ten, and eight with low mean scores of 3.34 (SD = 1.07), 3.68 (SD = 1.02) and 3.85 (SD = 0.94), respectively. Based on the mean results, the answers could verbally be interpreted as majority of the respondents sometimes flossed their teeth at least once a week. Some respondents often visited the dentist periodically to maintain their oral hygiene.

Lastly, some respondents often ate a balanced diet. The overall mean of the extent of the respondent's oral health practice was 4.22 (SD = 0.47) with a scaled response of often and a verbal interpretation of often practiced.

Table 4
The Extent of Oral Health Practice of Respondents

Items	Mean	SD	Scaled Response	Verbal Interpretation
1. I use a toothbrush to clean my teeth.	4.94	0.31	Always	Always Practised

2. I brush my teeth at least two to three times a day.	4.85	0.43	Always	Always Practised
3. I brush my teeth for no less than 2 minutes.	4.15	0.90	Often	Often Practised
4. I clean my tongue every time I brush my teeth.	4.27	0.97	Often	Often Practised
5. I floss my teeth at least once a week.	3.34	1.07	Sometimes	Sometimes Practised
6. I use a toothpaste containing fluoride to brush my teeth.	4.75	0.56	Always	Always Practised
7. I replace my toothbrush with a new one every 3 months.	4.42	0.79	Often	Often Practised
8. I eat a balanced diet.	3.85	0.94	Often	Often Practised
9. I eat a diet containing fresh fruit and vegetables rich in vitamins and minerals.	3.99	0.86	Often	Often Practised
10. I visit the dentist periodically to maintain my oral hygiene.	3.68	1.02	Often	Often Practised
Overall Practice Mean	**4.22**	**0.47**	**Often**	**Often Practised**

Legend: 1 – 1.54 = never, 1.55 – 2.54 =rarely, 2.55 – 3.54 =sometimes, 3.55 – 4.54 = often, 4.55 – 5 = always

The findings of this study presented similarities to Dayanand et al., (2017) whereby 100% of the teachers used a toothbrush and toothpaste to clean their teeth. Another similar study by Dawani (2013) reported all respondents to have brushed their teeth regularly, with 29% of them brushing once a day and 61% brushing twice a day.

Although there were similarities in some of the oral health practices of the respondents from different studies, there were also differences. This study showed that majority of the respondents often changed their toothbrush every three months. In contrast, Naidu et al., (2014) conducted a study that showed only 18.5% of the respondents were aware that a toothbrush was to be changed after a specific duration. These were very low numbers and could most likely be attributed to poor oral health awareness.

Relationship Between Knowledge and Practice

Table 5 shows the correlation between oral health knowledge and oral health practice. Based on the Pearson correlation test scores, the results showed no significant correlation between oral health knowledge and oral health practice with a p-value of 0.444.

Usually having good oral health knowledge leads to good oral health practices. The respondents in our study had good oral health knowledge. However, it did not influence their oral health practice probably due to lack of motivation. The hypothesis that there is no significant relationship between knowledge and practice was accepted.

Table 5
Relationship Between Knowledge and Practice

Indicator	r	Sig	Decision	Interpretation	VI
Knowledge →Practice	-0.014	0.444	Accept Ho	---	Not Significant

Legend: -0.50 – -0.70 = Strong negative relationship, -0.30 – -0.50 = moderate negative relationship, 0 – -0.30 = weak negative relationship, 0 = No relationship, 0 – +0.30 = weak positive relationship, +0.30 – +0.50 = moderate positive relationship, +0.50 – +0.70 = Strong positive relationship: p<0.05: null hypothesis is significant; p> 0.05: null hypothesis is not significant

The findings of this study disagreed Ghahroudi et al. (2016) where Pearson correlation was conducted between oral health knowledge and oral health practice of the respondents. The results revealed that there was a significant correlation with r = 0.32 and a p-value of <0.001.

The study by Alsumait et al. (2016) also led the researchers to conclude that there was no evidence that knowledge exerted a causal influence on the practice of the respondents. Furthermore, their study showed that habits such as toothbrushing or flossing were not associated with having correct knowledge about oral health practices.

The study by Alsumait et al. (2016) also led the researchers to conclude that there was no evidence that knowledge exerted a causal influence on the practice of the respondents. Furthermore, their study showed that habits such as toothbrushing or flossing were not associated with having correct knowledge about oral health practices.

Table 6
Relationship Between Attitude and Practice

Indicator	r	Sig	Decision	Interpretation	VI
Attitude → Practice	0.184	0.027	Accept Ho	Weak Positive Relationship	Significant

Legend: -0.50 – -0.70 = Strong negative relationship, -0.30 – -0.50 = moderate negative relationship, 0 – -0.30 = weak negative relationship, 0 = No relationship, 0 – +0.30 = weak positive relationship, +0.30 – +0.50 = moderate positive relationship, +0.50 – +0.70 = Strong positive relationship: p<0.05: null hypothesis is significant; p> 0.05: null hypothesis is not significant

Both oral health attitude and practice of the respondents increased. This reaffirms that positive attitudes can lead to good oral hygiene practices. Hence, the hypothesis that there is no significant relationship between knowledge and attitude was rejected. The findings this study agreed Ghahroudi et al. (2016) with whereby Pearson correlation was conducted between oral health attitude and oral health practice of the respondents. The results revealed that there was a significant correlation with r = 0.18 and a p-value of 0.024.

Conclusion and Recommendation

The overall findings of this study showed that majority of the respondents answered the knowledge questions correctly for each question with few respondents answering

incorrectly. Most respondents agreed that brushing teeth was an effective method for removal of food debris on teeth and toothbrushing was an activity that should be done twice to three times a day with nighttime as the most important time. Majority of the respondents also agreed that fluoride helped teeth resist acid produced by bacteria in the mouth when sugary foods are ingested.

Although majority of the respondents answered the oral health knowledge questions correctly, some questions had varying answers. Most respondents did not know gum disease was linked to general body conditions such as diabetes, heart disease or stroke. Some did not know a child with a disability was at a higher risk for gum disease and limiting the amount of snack eating throughout the day can cause less harm to teeth. However, those that participated in the study were seen to have an overall high level of oral awareness.

The results of the oral health attitude showed that majority of respondents answered strongly agree for six out of ten questions and agree for four questions. The findings showed the respondents had an overall positive attitude towards oral health. With regards to oral health practice, most respondents always practiced toothbrushing with the use of a toothbrush.

Majority of the respondents always practiced toothbrushing at least two to three times a day while most always practiced tooth brushing using toothpaste containing fluoride. Respondents had varying answers when asked about flossing teeth. The results revealed that majority sometimes practiced flossing at least once a week. The overall findings suggested that the respondents often practiced good oral health behaviours.

The overall findings based on Pearson correlation test scores suggested no significance between oral health knowledge and oral health attitude of the respondents with a weak negative correlation suggesting an increase in oral health knowledge and a decrease in oral health practice. There is no significance between oral health knowledge and oral health practice as well with a weak negative correlation suggesting an increase in oral health knowledge and a decrease in oral health practice of the respondents. However, findings showed a significance between oral health attitude and oral health practice of the respondents and a weak positive correlation suggesting an increase in both oral health attitude and practice of the respondents.

Given the findings and conclusion, the researchers recommend the following:

1. The improvement of the teachers existing oral health knowledge to be improved through frequent oral health seminars catered to by either the local government or organizations.
2. The seminars to include training on the importance of oral health and the creation of oral health awareness for their pupils with the help of oral health care professionals.
3. Reinforcement programs regarding changing the oral health knowledge into practice to be evaluated and fortified.

References

Ahmad, M. S. (2015). Oral health knowledge and attitude among primary school teachers of Madinah, Saudi Arabia. *Journal of Contemporary Dental Practice, 16*(4), 275-279.

Alsumait, A., ElSalhy, M., Almunezaa, E., Ariga, J., Al-Mutawa, S., & Amin, M. (2016). relationship between oral health knowledge, attitude and practices of primary school teachers and their oral health-related quality of life: A Cross-sectional study. *Oral Health & Preventive Dentistry, 14*(6), 519-528.

Altun, C., Guven, G., Akgun, O. M., Akkurt, M. D., Feridun , B., Akbulut, E., & Basak, F. (2010, October). Oral health status of disabled individuals attending special schools. European *Journal of Dentistry, 4*(4), 361–366. Retrieved April 7, 2019, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2948746/

American Dental Association (2006). Healthy mouth. *Journal of the American Dental Association, 137*, 1. Retrieved from https://www.ada.org/~/media/ADA/Publications/Files/patient_61.ashx

Creeth, J., Gallagher , A., Sowinski , J.(2009). The effect of brushing time and dentifrice on dental plaque removal in vivo. J Dent *Hyg*, 83(3), 111-116.

Dawani, N., Afaq, A., & Bilal, S. (2013). Oral health knowledge, attitude and practices amongst teachers of public school set-up of Karach,Pakistan. *Journal of the Dow University of Health Sciences Karachi*, 15-19.

Dayanand, M. C., Satish, V., Marwah, N., Vishwas, T. D., & Maganur , P. C. (2017). Knowledge, attitudes, and practices of school teachers toward oral health in Davangere, India. *Int J Clin Pediatr Dent, 10*(1), 89-85.

Department of Health (2011). *Oral health program.* Retrieved April 5, 2019, from Department of Health: https://www.doh.gov.ph/oral-health-program

Food and Nutrition Research Institute (2015). *National nutrition survey.* Retrieved from http://enutrition.fnri.dost.gov.ph/assets/uploads/publications/Overview_8thNNS_050416.pdf

Ghahroudi, A. A., Khorsand, A., Yaghobee, S., Rokn, A. R., Jalali, M., Masudi, S., . . . Kabir, A. (2016). *Oral health status, knowledge, attitude, and practice of patients with heart disease.* ARYA atherosclerosis, 1-9.

Gojkov, G. (1997). *Dokimologija [Docimology].* Beograd: Učiteljski fakultet.

Isman, B. A., Newton, R. N., & Baer, M. (2000). *Planning Guide for dental professionals serving children with special health care needs.* University of Southern California University Affiliated Program, Childrens Hospital Los Angeles, 1-67. Retrieved from https://www.mchoralhealth.org/PDFs/OHguide.pdf

Lancet, T. (2016). A systematic analysis for the Global Burden of Disease Study. *Lancet, 390*(10100),1211-1259. Retrieved from https://www.who.int/news-room/fact-sheets/detail/oral-health

Lawande, S. A., & Lawande, G. S. (2013). Tongue hygiene and its significance in the control of halitosis. *Journal of Orafacial Research, 3*(4), 256-262.

Maranhão, M. C., Pinheiro de Araújo, L., Vieira, K. A., & Costa, L. S. (2014). Dental health knowledge and attitudes of primary school teachers toward dental health education in Maceió, Brazil. *Brazilian Research in Pediatric Dentistry and Integrated Clinic, 14*(2), 115-128. doi:http://dx.doi.org/10.4034/PBOCI.2014.142.06

Mota, A., Oswa, K. C., Sajnani, D. A., & Sajnani, A. K. (2016). *Oral health knowledge, attitude, and approaches of pre-primary and primary school teachers in Mumbai, India.* Scientifica, 8. Retrieved from https://doi.org/10.1155/2016/5967427

Naidu, G. M., Viswanath, Prathap, K., Chaitanya, R. K., Garipineni, K., & Suresh, B. (2014). Knowledge, attitude, and practices toward oral health among school teachers in "Guntur City," Andhra Pradesh, India. J*ournal of Indian Association of Public Health Dentistry, 12*(3), 226-231. doi:10.4103/2319-5932.144808

National Institute of Dental and Craniofacial Research (2016, August). *Oral conditions in children with special needs, 1-2.* Retrieved August 26, 2018 from https://www.nidcr.nih.gov/sites/default/files/2017-09/oral-conditions-children-special-needs.pdf

Newby , E. E., Martinez-Mier , E. A., & Zero , D. T. (2013). A randomised clinical study to evaluate the effect of brushing duration on fluoride levels in dental biofilm fluid and saliva in children aged 4-5 years. *Int Dent J, 63*(2), 39-47.

Nur-E-Saud, Awal, A., Parvin, A., Zaman, S., & Akbar, T. (2016, April 2). *Study on oral hygiene: Awareness and practices among the school going children in Rajshahi Division.* Research & Reviews: Journal of Dental Sciences, 4(2), 41-46. Retrieved from https://www.researchgate.net/publication/322097050_Study_on_Oral_Hygiene_Awareness_and_Practices_Among_the_School_Going_Children_in_Rajshahi_Division/download

Rasheed, N. M., & Shetty, A. C. (2017). Oral health knowledge among female primary school teachers in Riyadh City, Kingdom of Saudi Arabia. *International Journal of Applied Dental Sciences, 3*(4), 164-170.

Singh, P., Bey, A., & Gupta, N. D. (2013). Dental health attitude in Indian society. *Journal of International Society of Preventive & Community Dentistry, 3*(2), 81-84. doi:10.4103/2231-0762.122444

Tikare, S., & AlQahtani, N. A. (2017). Oral health knowledge and attitudes of primary school teachers toward school-based oral health programs in Abha-Khamis, Saudi Arabia. *Saudi Journal of Oral Sciences, 4*(2), 72-77.

World Health Organization (1995). *Global school health initiative.* Retrieved from https://www.who.int/school_youth_health/gshi/en/#:~:text=Partners-,Global%20school%20health%20initiative,national%2C%20regional%20and%20global%20levels.

World Health Organization (2018, June 26). *Oral health.* Retrieved August 27, 2018 http://www.who.int/oral_health/publications/factsheet/en/

World Health Organization (2018). *Diet and oral health.* Retrieved September 13, 2019 http://www.euro.who.int/__data/assets/pdf_file/0009/365850/oral-health-2018-eng.pdf?ua=1

Exploring Life's Frustrations, Motivations, and Successes of Older Persons

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Abstract

As humans advance in age, many personal factors could determine whether or not an individual has succeeded well in life. Many have set a certain standard for themselves to meet, and to reach a certain goal there will be a time where an individual may not only lose motivation but also be frustrated as well. A qualitative descriptive study was used to explore the frustrations, motivations, and successes in life of 22 purposively conversant, mentally, stable older persons aged 60-85 regardless of their gender and educational attainment and without postural discomforts. Using Collaizi's method in analyzing the data it was found out that the successes of older persons come first from their academic achievements as well as to their children and grandchildren, followed by their spiritual maturity, successful marriage, material wealth, and get age. What frustrates them most are their failure to do what they need to do when they were still physically strong, then the failure of the individuals they financially support to pursue a degree, marital infidelity, and physical deterioration. Despite the frustrations they experience in life they remain motivated to live longer because of their family, their desire to continuously serve God and man, their life healthy practices and pursue their unfulfilled goals.

Keywords: *life frustrations, successes, motivations, older persons, qualitative study*

As humans advance in age, many personal factors could determine whether an individual has succeeded in life. Many have set a certain standard to meet; and to reach a certain goal, there will be a time where an individual may not only lose motivation but also be frustrated. The older persons have different ways to define whether they have succeeded. They have different perspectives on whether or not they have excelled well in society. Some say that it is through the absence of medical disorders, illnesses or even being able to carry oneself despite the age and complications.

In an older person's life where age is advancing and health is deteriorating, it is common to see the older persons struggle to keep their health as well as their physical abilities balanced. It has been stated that it is the feeling of being less a burden to their families that motivates the older persons to stay active; hence, the need to stay physically active and correcting eating habits to be more of healthier options (Bardach et al., 2015).

Others view successful aging as being able to go through the hardships of old age while encountering the illnesses and physical complications. A sense of overcoming the difficulties of old age and health deterioration is what makes the older persons feel a sense of motivation and success (Kernisan,2015). Although others view enduring the complications that the older persons go through as a success, some view it as a frustrating event, wherein acceptance of their health deterioration may be seen as a hindrance to doing activities they once did before. Some see their disorders and physical limitations as something that would burden them to family members or those taking care of them; hence why the older persons tend to refuse help from others (Burnetto, 2013).

In the eighth stage of Erick Erickson Theory, Ego Integrity Vs. Despair, it states that

the older persons in this age tend to reminisce about the things they have done in life. When one is unable to reach a certain goal, the feeling of being unable to reach or master a certain task may lead the older persons to feel as if they are in despair, although if the older persons reminisce the about past and are content with the accomplishments they have done, then a sense of ego integrity may be felt by the elder persons (McLeod, 2018).

Since there is limited study on the detailed frustrations, motivations, and successes of the older persons, the researchers sought more about this topic. The older persons have many ways to find the means of motivation, a feeling of frustration, and an elated sensation of success. This study was conducted to further explore in detail what causes frustrations, what motivates, and what their certain views are in terms of success in such an advanced age.

Research Objectives

The study intended to explore the responses of the inquiries mentioned below:

1. What are the life frustrations of older persons?
2. What are the life motivations of older persons?
3. What are life's successes of older persons?

Methodology

Research Design

A qualitative descriptive research design, specifically phenomenological study, was used in the exploration of the older persons' ideas regarding their frustrations, motivations, and successes in life. To upgrade the validity of the information and give credence to the findings, the researchers used the different methods of triangulation referring to the use of multiple referents to conclude what constitutes truth. Methods that helped to capture a more complete and conceptualized portrait of the frustrations, motivations, and successes under study. To check and establish the validity of the study was also considered. the researcher used triangulation by data source, triangulation by method and the environment triangulation. In selecting the informants from the population of older persons, purposive sampling was used. This study utilized 22 older persons between ages 60 to 85, male or female, regardless of their educational attainment, who were conversant, mentally stable, and without postural discomforts, and who took their medications ahead of time prior to the interview.

The interview consisted of a semi-structured guide with open-ended questions to get information and their insights and their experiences about their successes, frustrations, and motivations in life. The data were collected for a period of one month. Questions asked were validated first by the experts and were submitted for the pilot study. The investigation was reviewed with the help of the Ethics Review Board of the University and all the information that the researchers gathered had approval before it was released. The researchers also secured letters from the college of nursing to get entry into the target places where the interviews took place. A letter was also be given to the participants. A preliminary meeting took place with the participants prior to the actual interview days before. The meeting was conducted by the researcher and a Registered Psychology major. The purpose of the meeting is to establish trust with the informants, review the ethical considerations, and completed consent forms for those who decided to be part of the study. A review of the research questions was made, and a questionnaire was given to the informants to allow them enough time to dwell and ponder on their frustrations, motivations, and successes in life. The interviews were

conducted by the researchers in different places in which when this happened only the researchers and the informants were in the setting assigned for the interview.

The older persons chosen for the study were interviewed furthermore, the separate meetings went on for around 45 minutes to 60 minutes. They were approached to portray their frustrations, motivations, and successes, explicitly, to depict their considerations, sentiments, and discernments that they had encountered in their life. They were then solicited to share as much from those encounters to the point that they did not have whatever else to portray. The process mentioned was needed to check the reliability of this study. This information examination included the change of crude information into the last account, recognizing basic topical components found in the crude information. Data analysis followed the method described by Collaizi (1978).

Results and Discussion

Life's Frustrations of Older Persons

The feeling of frustration is something that anyone experiences. It is only normal for one to go through frustration to realize the strengths they are capable of. Part of aging is experiencing the frustrations that may make or break a person. One may or may not handle it well, but when looking at such challenges, one will realize how the outcomes had influenced these individuals at this present time.

No frustration. Upon interview, when the participants were asked about their frustrations in life, the majority of them answered that they had no frustrations but were rather contented with their life. All the participants that answered none seemed to have no worries about their old age. They seemed to be stress-free and are always looking at the positive side of life. So far, five participants were labeled to have no frustrations. They satated:

Participant #12 *"I think none. I can't remember, maybe those common but nothing really serious. I'm happy and contented"*
Participant #13 *"No need to be frustrated. Every time I feel frustrated, I come to the Lord and that's my job."*
Participant # 18 *"I don't have any frustrations in life. I am very happy in Life."*
Participant #19 *"I don't have frustrations. None."*
Participant #21 *"I cant think of any frustrations at the moment. I have forgotten all hardships I had."*

Stibich (2019) claimed that to be happy in life, it is best not to worry about what life may throw. Each older person deserves to be happy even at their age, as they let happiness flow in life. While happiness increases with age, it may take a downfall by the early 30s and shoot back up around the age of 60. It is important to have a positive outlook in life even when it seems impossible to others. Happiness is the key to a simple and contented life as people age. Worrying too much about the past rather than enjoying the present is what will bring death sooner than expected. The participants who classified themselves to have frustrations said that what frustrated them the most were their failure to do what they needed to do while they were still physically strong; then the failure of the individuals they financially supported to pursue their respective degrees, their marital partners' infidelity; and their physical deterioration. The specific themes that were identified to support these claimed frustrations were (a) family members' unfinished degrees, (b) regrets, (c) unfulfilled degrees, (d) illness, (e) marital partners' infidelity, and (f) death of a spouse.

Family members' unfinished degrees. When the participants were asked about their frustrations, one of the main

frustrations mentioned was that their family members' were unable to finish schooling. The participants stressed that their children were not able to finish schooling. Four participants validated the identified frustrations and they were the following:

Participant #10 *"Pagloloko nung dalawa kong anak na lalaki noon. Hindi sila nakapagaral ng college dahil nagloloko sila"*
"My kids were fooling around and were not able to finish college"
Participant #11 *"My Children [were] not being able to finish school"*
Participant # 14 *"My children not finishing their education and I have one grandchild who's very smart but too lazy to study.... I feel I am failure as a mother."*
Participant #20 *"My siblings that didn't finish their studies."*

According to Lund (2014), many factors could arise when someone deals with an unfinished education. Upon further research, the leading cause when one fails to finish school has something to do with individual issues, such as poor self-esteem and lack of motivation. The majority of the time a dropout would have consists of a lack of motivation to finish school. In an agreement, McConell and Kubina (2014) found out that when a principal or school faculty takes the initiative to inform the parents about their students, class attendance increases. According to Wang and Fredricks (2014), by engaging more in school and other social activities, children can finish their education by being socially accepted into the norms of the school. Those who find it hard to socialize find it difficult to feel accepted in school.

Regrets. The participants voiced out how they wished they were wiser in their younger years. What they know now, they wish they knew before. They further reiterated that in their younger years they only cared about what made them happy and not how it could have affected them in the future. There were many reasons that an older person has built a feeling of regret. Others felt as though they could have done better in the past and others wished they were wiser while they were younger. So far, the participants who expressed these sentiments were the following:

Participant #16 *"I regret that I did everything I could just to satisfy myself…. I wasted so many things."*
Participant #20 *"I wish I knew back then what I know now…"*
Participant #22 *"I have not exerted enough effort in any endeavor…. when I know I could have done a greater thing when I have tried more."*

According to Walton (2018), some older persons tend to look back and regret not being their "ideal self. Also people tend to be self-centered to satisfy their happiness. Those who regretted being self-centered wished they spent more time achieving long term goals.

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Illness. Some participants verbalized that illnesses were a part of their frustrations. They felt that the illnesses they dealt with have a big effect on how they perform their daily activities. They felt as if their movements were slower and more painful. This theme was validated through the statements of these participants.

Participant 15 *"I got sick but with God's help I am victorious over my illness."*
Participant 17 *"Sickness…"*

Lifestyle and habits determine what people's health will be like as they age. Poor choices may cause the presence of an illness. According to Conejero et al. (2018), as older adults advanced in age, they claim that it is their deteriorating health that frustrates them. Having to deal with an everyday struggle of battling a health condition is frustrating for older persons who are still relatively active for their age. Although they may be meticulous with their lifestyle and what they eat, their body had grown weak from their past lifestyles and the environment they are in, which could have contributed to the presence of disease.

Marital partners' infidelity. Some participants voiced out that their frustration has something to do extramarital affairs. The feeling of guilt from a former action of cheating still stays at the back of their mind. Others were frustrated because a partner has cheated at some point in the relationship. It is often difficult to deal with a feeling of betrayal such as this because the participants who said so, stated the following:

Participant #1 "My Husband had another woman"

Participant #2 "Most frustration I had was when I cheated on my wife"

According to Smith (2018), people cheat to cover up a need that is not met, whether it be sexual, emotional, or even when a person is going through a midlife crisis. Those who have been cheated on, according to Hudson (2015), feels as if the future is crumbling right beneath them. They often question themselves and tend to have lowered their self-esteem from overthinking their self-worth. Cheaters often counter their wrong actions by justifying their actions by increasing acts of kindness towards their partners, or they may emotionally separate themselves and grow apart from their partners.

Death of a spouse. Upon interviewing a set of participants, when the question came up about their greatest frustration, the death of their partner being their greatest frustration came out. It was not easy losing a loved one, especially if it's a beloved spouse and lifetime partner. Having someone who shares old age is an opportunity that is lost when one loses a partner. There was one who participated stating this type of frustration:

Participant #3 *"Also my husband died so early. I would be a widow at such an early age"*

According to Momtaz et al. (2015), the most experienced emotion in men when experiencing the death of a spouse is anxiety. Whereas for women, its financial security and becoming a widow. Although both men and women experience the death of a spouse differently, the most that come up is the anxiety of being alone. Many are frustrated at the fact that they have to live a lonely remainder of the time that they have left to live.

Life Motivations of an Older Person

The motivations of older persons differ from one to another. As the older persons recall their motivations, it was seen that the participants had shown a series of facial expressions that consisted of thinking, being contented, and then being proud. It was further observed that the older persons interviewed were driven by their motivations so that they could reach their goals. The older persons had shown great passion in explaining what their motivations were. Upon interviews, when they were asked about their motivations, many came and it was observed that despite the frustrations they experienced in life, they remain motivated. The motivations determined from their realities were their desire to continually serve God and man, to live longer because of their family, improve their health practices, and pursue their unfulfilled goals. To support these identified motivations the following themes were extracted from their statements: (1) supreme being, (2) grandchildren, and (3) healthy lifestyle.

Supreme being. Among the 22 participants interviewed about their motivations, nine (9) of them expressed that their relationship and connection with God matters most. This relationship with a supreme being as one of their motivations is supported by the statements of the following participants:

Participant #1 *"by the help of God"*
Participant #3 *"I want to dedicate my life to God"*
Participant #8 *"For me it is that I am leaning on Gods promises"*
Participant #9 *"The promise of God that you will never get sick if you follow his words in the bible"*
Participant #10 *"My faith to God "*
Participant #12 *"My family and of course I will serve our Almighty God"*
Participant #16 *"I think I have so many debts in God and I need to pay for that, that's why I want to live longer to serve Him."*
Participant #20 *"The gift of life"*
Participant #22 *"Life is a gift from God. The longer I live the more God can use me."*

According to Ulvoas (2016), a journey with a supreme being affects people's lives. The dependency that the participants had towards a supreme being was what kept them motivated to live longer. Feeling connected to a supreme being made the older persons feel as if they are capable of overcoming any setbacks that may come their way. It reminded them that they had a supreme being watching over them and guiding them throughout their stay here on Earth.

Grandchildren. Next to God, the identified motivation of the participants was their grandchildren, whether it was to witness their upbringing or to simply watch them succeed in life. The older persons found it satisfying to see the successes of their families, especially the children of their offspring. The following were the participants who expressed supporting this claim:

Participant #1 *".. my children and my grandchildren"*
Participant #2 *"My grandchildren growing up"*
Participant #6 *"Seeing my grandchildren grow and get married"*
Participant #7 *"My grandkids, my kids, and family and of course the work I do for church"*
Participants #14 *"To see my grandchild finish his studies and see him be stable in Life"*
Participant #15 *"to see my grandchildren are all healthy, no illness, happy, with sweethearts. It makes me happy."*
Participant #17 *"I want to live longer to see my grandchildren"*
Participants #21 *"My grandchildren motivates me to live longer. I enjoy cooking breakfast for them."*

These realities about grandchildren as the motivation of older persons are supported by Albernaz (2015), having to spend time with their grandchildren often suppresses the feeling of depression, brings family bonding closer than ever, and being able to mentor and keep their grandchildren mentally prepared for life. Oftentimes, grandchildren find it easier to open up to their grandparents.

Healthy lifestyle. The third identified motivation of the older persons was their practice of a healthy lifestyle. They felt as their life kept going with it. Herewith were the participants who enthusiastically supported such a claim:

Participant #8 *"...I take time looking at my diet, my rest, exercise, and making people happy."*
Participant #18 *"I am always happy and I am very careful on what I eat."*
Participant #19 *"Avoid stress, eat, healthy and drink your medication."*
Participant # 20 *"I love helping others… always think positive."*

Bardach et al. (2016) explained that older persons find it motivating when they can maintain their health and have simple health teaching about improving their health so that may live longer. Mlinac and Feng (2016) states that older persons would rather maintain their health and improve it rather than being a burden to their family and those around them. The older persons find that a healthy lifestyle is what kept them going as well as having a positive healthy mindset. Being mindful of what they eat and what surrounds them contributes to a healthy lifestyle.

Life Successes of Older Persons

Successes reflect life achievements and being able to meet them during their younger years. As the older persons reminisced about their successes in the past, the facial expressions vividly showed expressions of happiness, contentment, and pride of what they have become and how their desires have been achieved. Based on the results of the interview, the successes of older persons come from their (a) academic achievements of their children, (b) children, (c) grandchildren, (d) spiritual maturity, (e) successful marriage, (f) material wealth, and (g) gotten age.

Academic achievements of their children. The majority of the older persons who participated in the study enthusiastically recognized and verbalized that their greatest success in life was their children who were able to reached and finished the needed education. This realization was supported by the following participants:

Participant #1 *"To let my children finish their study"*
Participant #2 *"I am successful because my children were successful."*
Participant #6 *"When all of my children graduated as professionals"*
Participant #12 *"..to my two children and be able to finish and support their study."*
Participant #15 *"..all my kids finished college."*
Participant # 16 *"And be able to send my children to school and finished their studies."*
Participant #17 *"My children finished college."*
Participant # 18 *"...and my children finished their education."*
Participant #20 *"... My children finished their college."*
Participant #21 *"I let my children finished college.."*
Participant #22 *"...my sons as well who have been successful and disciplined in their studies."*

According to Chui (2019), parents often sacrifice everything for their children to have the best opportunities. There is nothing wrong with making sacrifices, but parents must

remember that they have an identity outside of their children. Being a parent to their children simply the greatest achievement of their lives. According to Murphy (2019), giving the financial support and focus to their education has shown greater influence and support towards the children and others who strive for an education.

Finished college. The overwhelming thought of walking in the stage and receiving diplomas was the dream of the participants. Education for them is the key to success. Way back to their old days, some are lucky to have financial support from the family, some were not, so they were working and studying at the same time to achieve their goal to have a college degree. Participants valued so much their education and pursued it with all their efforts. The considered successes in their studies despite the hardships of their life are exemplified by the following participants:

Participant #2 *"BS in Education in mathematics"*
Participant #10 *"My success is I finished college and went to America"*
Participant #13 *"I finished college even though I'm working student.."*
Participant #18 *"Finished my education."*
Participant #22 *"I have been successful in my studies"*

Wisdom is then earned from such higher education in which a person will have a greater impact on the world. Once a person is educated, it is solely their choice to influence the youth and the whole world included.

Church ministry. Some participants associated their success by doing ministry regardless of their religion as long they were able to do it; while to others, success for them was to go to a foreign land where they were a missionary and was able to serve God and their fellowmen. The following missionary-minded participants indicated success in the service of the Lord and helping their fellowmen:

Participant #9 *"When I see the students in service and faithful to God, same as to my family"*
Participant #11 *".. I am an active member of the church"*
Participant #13 *"...then we became foreign missionaries for 11 years in Papua New Guniea"*
Participant #19 *"We are missionary in Palau for so many years. I love serving people."*

According to Church on the Rock Ocho Rios (2019), one who serves a supreme being will dedicate oneself to have a spiritual relationship. One will never be a successful person if you do not do what the Lord tells to do. It is not enough just to have a servant's mentality; a person must be determined to serve and help others.

Spiritual relationship. Having a spiritual relationship does not always mean with a God, but with a supreme being one believes in, with that some of the older persons who participated in the study claimed that they attribute their success to having a stronger faith God. Furthermore, those who have a deeper connection to a supreme being/ God, seem to excel better in life than those who do not have a spiritual relationship. Some participants claimed they have a good connection with God in which it gave them a feeling of success achieved through their relationship with God. The participants who supported these are the following:

Participant #5 *"I am also successful because I overcome weakness in my faith and I learned the spirit of forgiveness and kindness"*
Participant #8 *" Is to be connected with God"*
Participant #9 *"When I see the students in service and faithful to God, same as to my family"*

Participant #10 *"When my children are happy and God fearing"*

According to Chaput (2014), every successful marriage is also a form of a good relationship with God and with other people. If a person has a good foundation with God, everything will just follow. Patterson (2017) stated that when a person has a personal relationship with God, He can guide that person through signals and spirits to make the right decisions more instead of just knowing what is wrong or what may seem as right. Overall, having a personal relationship with God helps a person grow as human, and it is a unique thing to have patience and a willingness to change.

Successful marriage. Having to go through marriage, whether difficult or not, is seen as quite a blessing. Having a successful marriage is one of the many goals some would like to experience. Indeed, it was declared to be a success of some participants when they stated that:

Participant #7 *"My successes in life is marrying your grandfather.."*
Participant #15 *"Married to a good man.."*
Participant #18 *"I have a happy married life.."*

In the study of Margelisch et al. (2015), those who are in a happy relationship show signs of being healthy as well as having a balanced lifestyle, and those that do not, show that they are more lonely. Unstable and stressful marriages are reflected in the face of those experiencing them.

Conclusion and Recommendation

Based on the findings, the researchers conclude that all older persons have different frustrations that have contributed to their fair share of life. Each frustration that they have encountered has made them up to be whom they are and have built a strong mindset to overcome whatever frustration may come. Moreover, all the participants that were interviewed had wonderful motivations to keep them going in life. Whatever it may be, it is a reason to keep their heads up and to look forward to what life may show them in the remaining years of their lives. Every participant that was interviewed has given the interviewers their fair share of successes. Each success molded them to be who they are today. As they look back a greater majority seemed happy and content with their life.

These are what the researchers recommended:

1. Nurses should be active listeners to older persons for them to identify the successes, frustrations, and motivations of the older persons to know their lowest points in life and use them as a tool for boosting self.
2. Encourage older persons to participate in church ministries, charity works, and any activities where they can serve other people.
3. Nurses should encourage the younger generations to involve the older persons in any family plans and activities for them to feel loved and still involved even in old age.
4. Nurses should give counseling to the older persons regarding life's frustrations for them to that realize life is still worth living despite having regrets.

References

Albernaz, A. (2015, December 14). Study: Close grandparent-grandchild relationships have healthy benefits. *The Boston Globe.* https://www.bostonglobe.com/lifestyle/2015/12/13/close-grandparent-grandchild-relationships-have-healthy-benefits/kxL8AnugpVBKknDuzHZDKO/story.html

Bardach, S. H., Shoenberg, N. E., & Howell, B. M. (2015). What motivates older adults to improve diet and exercise patterns? *The Gerontologist,55*(Suppl_2), 681-681. doi:10.1093/geront/gnv350.06

Chaput, C. J., O.F.M. (n.d.). *Ten ways to deepen our relationship with God.* https://www.catholiceducation.org/en/religion-and-philosophy/spiritual-life/ten-ways-to-deepen-our-relationship-with-god.html

Chui, A. (2019). *Raising a successful child is a curse for every parent.* https://www.lifehack.org/644651/raising-a-successful-child-is-a-curse-for-every-parent

Church on the Rock Ocho Rios (2019). *Becoming a successful servant of god.* https://churchontherockochorios.com/becoming-a-successful-servant-of-god/

Collins, M. L., & Vargas, J. (2017, February 27). *Why millions of americans never finish college.* https://www.citylab.com/life/2017/02/why-millions-of-americans-never-finish-ccccollege/517xsddss713/

Conejero, I., Olié, E., Courtet, P., & Calati, R. (2018). *Suicide in older adults: Current perspectives.* Clinical Interventions in Aging, 13, 691-699. doi:10.2147/cia.s130670

Hudson, P. (2019, May 07). *What it's like to be cheated on by someone you love more than anything.* https://www.elitedaily.com/dating/cheated-someone-you-love/989630

Lund, I. (2014). Dropping out of school as a meaningful action for adolescents with social, emotional and behavioural difficulties. *Journal of Research in Special Educational Needs, 14*(2), 96-104. doi:10.1111/1471-3802.12003

McConnell, B. M., & Kubina, R. M. (2014). Connecting with families to improve students' school attendance: A review of the literature. *Preventing School Failure: Alternative Education for Children and Youth, 58*(4), 249–256. doi:10.1080/1045988x.2013.821649

Mlinac, M. E., & Feng, M. C. (2016). Assessment of activities of daily living, self-care, and independence. *Archives of Clinical Neuropsychology,31*(6), 506-516 doi:10.1093/arclin/acw049

Mcleod, S. (2018). *Erik Erikson's stages of psychosocial development.* https://www.simplypsychology.org/developmental-psychology.html

Momtaz, Y. A., Haron, S. A., Ibrahim, R., & Hamid, T. A. (2015). Spousal death anxiety in old age. *OMEGA - Journal of Death and Dying, 72*(1), 69–80. doi:10.1177/0030222815574702

Murphy, P. (2019). '*Being a mother is the greatest achievement of my life': Victoria Beckham writes a touching letter about her kids.* https://www.independent.ie/style/celebrity/being-a-mother-is-the-greatest-achievement-of-my-life-victoria-beckham-writes-a-touching-letter-about-her-kids-31208839.html [Accessed 16 Jul. 2019].

Patterson, A. (2017, August 30). *The importance of your relationship with God.* https://www.theodysseyonline.com/the-importance-of-your-relationship-with-god

Smith, K. (2018, December 8). *How do cheaters feel about their cheating?* https://www.guystuffcounseling.com/counseling-men-blog/bid/91325/how-do-cheaters-feel-about-their-cheating

Stibich, M. (2019, June 07). *Is aging the secret to happiness?* https://www.verywellmind.com/aging-the-secret-to-happiness-2224100

Ulvoas, G. M. (2016). *Spirituality and the travel motivations of older adults.* https://arrow.dit.ie/cgi/viewcontent.cgi?article=1136&context=ijrtp

Wahl, H., Deeg, D., & Litwin, H. (2016). Successful ageing as a persistent priority in ageing research. *European Journal of Ageing,13*(1), 1-3. doi:10.1007/s10433-016-0364-5

Walton, A. G. (2018, May 31). *What are your regrets? Most people regret not becoming 'ideal self,' study finds.* https://www.forbes.com/sites/alicegwalton/2018/05/30/what-are-your-regrets-most-people-regret-not-becoming-ideal-self-study-finds/#710b80594925

Wang, M.T., & Fredricks, J. A. (2013). *The reciprocal links between school engagement, youth problem behaviors, and school dropout during adolescence.* Child Development, 85(2), 722–737. doi: 10.1111/cdev.12138

World Health Organization (2019). *Proposed working definition of an older person in Africa for the MDS Project.* https://www.who.int/healthinfo/survey/ageingdefnolder/en/

Knowledge, Attitude, Treatment Beliefs and Immunization Practices of Primary Caregivers of Children Ages 0-6 Years Old in Selected Barangays in the CALABARZON Region

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Abstract

Immunization is one of the most effective government-led health campaigns to prevent the spread of communicable diseases and its complications that may eventually lead to death. Its goal to protect the community has been apparent ever since its inception despite several issues that arise to defeat its purpose. The study was conducted to determine the extent of knowledge, attitudes, and treatment beliefs in immunization. A purposive sampling method was used to 323 participants for the study. Descriptive statistics, mean, standard deviation, Pearson product-moment coefficient, t-test, and ANOVA were used for statistical analysis. Results showed that primary caregivers have a high knowledge (M = 1.78; SD = 0.16), generally had a positive attitude (M = 3.90; SD = .56), and very good treatment beliefs in healthcare professionals while having a poor belief in faith-healing or spiritual healing (M = 3.23; SD = .55). Generally, respondents have a very high practice regarding the use of the single-dose vaccine (M = 4.02; SD = 1.06) but have poor immunization practices on multiple-dose vaccines (M = 3.09; SD = .95). A significant negative correlation was found between treatment beliefs and immunization practices (p = .002, r = -.174) which means that as the beliefs increase, immunization practices decrease. On the other hand, there was no significant correlation between immunization practices and knowledge and attitude. It is recommended that health promotion regarding the benefits of immunization should be a priority given the high incidence of preventable diseases.

Keywords: *treatment beliefs, primary caregivers, knowledge, attitude, immunization practices*

There is about 85% of children who received immunization annually worldwide. Despite this figure, more than 3 million individuals succumbed to vaccine-preventable diseases each year as stated by the Children's Hospital of Philadelphia (2018). Meanwhile, according to the World Health Organization (WHO, 2019), such illnesses dramatically increased in the Philippines from 2017 to 2018, Diphtheria cases almost tripled, rising from 68 to 183%; Measles prevalence surge approximately ten times the previous year, noting 2,428 to 20,827 cases; and pertussis elevated for about four times, from 88 to 339 cases. An outcome that may be attributed to the recent issues the nation is facing regarding immunization.

The WHO emphasized that vaccination is one of the most cost-effective ways in preventing illness, such could also avoid about two to three million deaths annually if there will be an improvement in the global coverage of vaccinations as cited by Cabico (2019). As noted by WHO (2017), "immunization and mass drug administration coverage to control the spread of vaccine-preventable diseases as well as neglected tropical diseases is higher than before". Comparatively, in a short period, records have shown a huge decline in immunization after the Dengvaxia controversy. Statistics have revealed how this change greatly impacted the nation.

The demand to restore and further increase the providence of immunization in the community greatly led the researchers to consider the different aspects that might affect the immunization coverage of the people especially the young ones. The knowledge, attitudes as well as treatment beliefs of primary caregivers may influence their decision of whether to have their children immunized or not. The relation of these factors with the immunization practices may also be worth considering in responding to the issues the nation is currently facing.

Furthermore, this study targeted the population in selected barangays of the CALABARZON region upon considering its high incidence of measles. This year 2019, from January 1 to July 15, there is a total of 8,643 measles cases in the region.

The unending crises along with the necessity to search for potential solutions paved way for yet another settling of goals. Today, diverse literature about immunization has been published worldwide. However, there is none to few studies that determine the relationship of knowledge, attitudes, and treatment beliefs with immunization practices as moderated by the personal profile of primary caregivers in the Philippines which may be particularly important given the rising cases of vaccine-preventable illnesses in the nation. Hence, leading to the research gap the researchers wish to respond to, simultaneously carrying the aim to help Filipinos correct their misconceptions regarding immunization, and ideally would provide a basis for an intervention program to aid in preventing disease outbreaks in the future.

Statement of the Problem

This study determined the knowledge, attitude, treatment beliefs, and immunization practices of primary caregivers of children 0-6 years old in selected barangays in the CALABARZON Region. Specifically, this study will answer the following questions:

1. What is the personal profile of the primary caregivers in terms of:
   a. Age
   b. Sex
   c. Civil Status
   d. Educational Attainment
   e. Religion
   f. Relationship to the child
2. What is the extent of the knowledge of the primary caregivers towards immunization?
3. What are the attitudes of the primary caregivers towards immunization?
4. What are the treatment beliefs of the primary caregivers towards immunization?
5. What are the immunization practices of primary caregivers?
6. Is there a significant relationship between knowledge and immunization practices among primary caregivers?
7. Is there a significant relationship between attitude and immunization practices among primary caregivers?
8. Is there a significant relationship between treatment beliefs and immunization practices among primary caregivers?

Review of Literature

Knowledge on Immunization

Successful dissemination and accomplishment of immunization programs depend on a multitude number of factors. One important consideration is the knowledge of immunization among the primary caregivers. In a cross-sectional study survey done by Habib et al. (2018) which was carried among 600 different Saudi parents from different cities in Saudi Arabia for the course of 3 months. The participants completed a questionnaire that contains four different parts about demographics, knowledge, attitudes, and practices of parents towards immunization.

The results obtained were parents showing a high level of awareness about immunization which resulted in a positive attitude and practice pattern among them. The higher the knowledge, attitude, practice (KAP) level was significantly associated with female gender, higher education degree, and having a high number of children.

Furthermore, a descriptive cross-sectional household survey was done in Igbo-Ora, Oyo State in Nigeria study conducted by Adeyinka et al. (2009) to determine the awareness and attitude of mothers under-five towards immunization as well as the proportion of children who were completely immunized in 12-28 month age with five hundred and three mothers who were interviewed with a mean age of 27.3 years and Standard Deviation of 5.7 years. About 99% of the participants were aware of or know about the immunization program. The reasons reported after analyzing the data for not completing immunization include long waiting on queues (46.1%), payment at private clinics (20.2%), and distance (17.7%).

Similarly, a study done by Seskute et al. (2014) used a cross-sectional survey to evaluate post-partum mothers' knowledge and attitudes towards the children's immunization program. An anonymous questionnaire was handed out to 300 participants in the Hospital of Lithuanian University of Health Sciences Kauno Klinikos from March to July of 2014. Sixty-three percent of the respondents obtained higher education, they indicated that their main sources of information about children's vaccination were the doctor, the Internet, and mass media. Eighty-seven percent of the participants considered vaccine-preventable diseases to be dangerous however 57.3% of them have the knowledge that vaccines provided efficient protection. The knowledge of the respondents was evaluated as good (36.3%), average (41.3%), and poor (22.3%). Among the respondents whose knowledge was good, 72.7% were still worried about the possible adverse effects following immunization.

Correspondingly, a local study revealed that parents with a higher knowledge score regarding immunizations were likely to have fully vaccinated children (Eugenio & Carlos, 2015). For instance, Banggay (2012) presented a study regarding the perception of the Maguindanaon Muslim mothers on immunization, using a non-random sampling technique to identify the 100 participants, 31-40 years old, married, with 3-5 children, uneducated and unemployed using a self-structured questionnaire This descriptive study aimed to enumerate the perceived benefit and risks of vaccination and describe their immunization beliefs and practices. Results revealed that 54% of the mothers reported that their children did not receive any immunization believing that vaccines are unnecessary and not safe, and is comparable to a poison. In conclusion, participating mothers believed that vaccines cause illnesses. Their perceptions were primarily influenced by their culture, religion, socio-economic status, and educational attainment.

Attitude on Immunization

A study from Saudi Arabia, assessed the knowledge, attitude, and practices of Saudi parents with regards to the immunization programs implemented and found out a positive correlation towards the parent's attitude and vaccination. All 600 respondents agreed that vaccination is beneficial and will even guide other parents/guardians about the immunization process. Saudi's vaccination program was favorable to the general public that out of 600 population, 89.3% are in favor and it is not that significant compared to the majority. The overall level of parents' KAP was good, -87.2%, in correlation to higher education degrees and female gender. On the

other hand, 12.8% was poor and was correlated with a male gender parent 83.1%, and 40.3% with a primary school degree and 50.6% with a higher degree. In conclusion, the study points out that more educational programs are needed to increase the KAP, targeting the less educated parents in the countryside (Habib et al., 2018).

After the Philippines' Dengvaxia panic, the rates of vaccinations diminish according to the study made by the Vaccine Confidence Project. The results showed a marked decline from 100% to 20% in the confidence of the Philippines from 2015-2018 with just a span of 3 years.

Treatment Beliefs

People of today's generation possess various beliefs that influence their behavior towards certain things. They often find alternatives to enable them to stand for what they believe in. With regards to the immunization dilemma which the nation is currently facing, studies show that numbers of parents became vaccine-hesitant and try to delay or stop their children to acquire proper immunization.

Furthermore, a study conducted by Daley et.al (2015) addresses the growing concerns of the primary caregivers in vaccine hesitancy through engagement, balance, and timing. In addition, they found out that through these methods, the prior beliefs of the mothers from the time of conception whether to immunize their child or not will be properly guided and corrected. Ultimately, building trust, reducing concerns about unfounded risks of vaccines, and helping parents understand that following immunization schedules in the best interests for their child without thinking of other alternatives are the most successful interventions that the healthcare field could offer in this particular public health issue in vaccine hesitancy.

Conversely, health beliefs are superior when compared to knowledge, in terms of its role and its ability to predict vaccine intention. These are drawn from the HBM or the Health Belief Model and the KAP (Knowledge, Attitude, Practices) which highlights the 4 belief constructs as a precursor to health behavior: perceived susceptibility, severity, benefit, and barrier. While knowledge and health beliefs are important determinants of vaccination practice, people's perceptions about risks associated with vaccines greatly hindered the vaccination process where a behavior influences the overall health status and actions of a person. (Paek et al., 2015)

Alternative medicine' or herbs' use has been prevailing during the past few years within the nation as well as worldwide. This has been validated by many of the ancient alternative medicines passed on by the Filipino folks. One hundred twenty practitioners of alternative medicine in 9 selected barangays of Alaminos were utilized as respondents to identify the use of alternative medicine and health care practices of people residing in far-flung areas. They utilize medicinal plants in treating diverse illnesses despite not knowing the plants' specific medical content and properties (De Vera, 2017).

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Methodology

This study utilized a quantitative research design. To further achieve the purpose of this study, the researchers had utilized a descriptive evaluative, descriptive correlational design, descriptive comparative, and structural equation modeling. The respondents of this study are primary caregivers of children ages 0-6 years old from selected barangays in the CALABARZON Region. The CALABARZON Region was chosen as the locale of the study because this region was noted to have the highest cases of measles according to the data from the Department of Health (DOH) in 2019. Selected barangays from this region were chosen such as Brgy. Molino III, Bacoor City in Cavite, Brgy. Malaban in Biñan, Laguna, Brgy. Sabang in Lipa City, Batangas, Brgy. San Jose in Antipolo, Rizal, and Brgy. Ibabang Dupay in Lucena City, Quezon. The primary caregivers include the mothers, fathers, and/or other family members and guardians primarily entrusted to take care of the child/children. To be part of the sample these primary caregivers should have been primarily in charge of taking care of the child/children for at least three consecutive years. The primary caregiver must be the one making decisions concerning the health of the child/children.

A total of 323 participants participated in the study. Out of 323, 106 or 32.8% of the respondents are on the age category of 29 years old and below. About 103 respondents, which is 31.9 % of the total participants are between 30 and 38 years old, and the remaining 114 respondents, ages 39 and above, are 35.3% of the total subjects. Out of 323 respondents, 300 are female and 23 are male. Female subjects with 92.9% are more than the male subjects who participated in this study with 7.1%. The civil status was also considered and showed that of the 323 respondents, the majority are married totaling to 191 or 59.1%.

93 respondents are living with a partner, with a percentage of 28.8%, 15 are single, with 4.6%, 13 or 4.0% are widowed and the remaining 11 or 3.4% are divorced or separated. In terms of educational attainment, 196 or 60.7%. 62 respondents finished elementary, with a percentage of 19.2%, 61 respondents were able to finish college, with 18.9%, 3 respondents or 0.9% were postgraduates and 1 or 0.3% did not have any education at all.

The researchers utilized a combination of a self-constructed questionnaire and a modified questionnaire. This questionnaire was then validated by a group of experts and laymen and was eventually used as a measurement tool. Originally, there are 15 question items under knowledge, 12 question items under attitude, 10 question items under treatment beliefs, and 15 question items under immunization practices after the questionnaire had been validated which was used during the pilot testing. The result of reliability testing of respondents' knowledge towards immunization was .512 thus particular items under the knowledge that failed to pass the reliability testing were removed from the questionnaire.

The protection of the privacy of research participants is ensured with an adequate level of confidentiality hence their anonymity was kept throughout the duration of the study and even after it has been conducted. Clear, honest, and transparent communication between the researchers and the participants was also applied. Furthermore, this study has been issued a protocol code 2019-ERB-AUP-064 by the Ethical Review Board (ERB) of the institution, before the start of the data gathering.

The gathered data was encoded and analyzed using Statistical Package for Social Science (SPSS) software version 23. The specific statistical treatments that were used are the following:

Frequency distribution and percentage were utilized to determine the socio-demographic profile characteristics of the respondents. Mean and standard deviation were employed to determine the cognitions in terms of the level of knowledge, locus of control, and self-efficacy; food preferences such as health, sensory quality, convenience, cost, and familiarity; and extent of breakfast practices. Pearson's product-moment correlation coefficient was performed to determine the relationship between cognitions, and food preferences to breakfast practices. Analysis of variance (ANOVA) and t-test was used to examine the significant differences in the breakfast practices of the students when they were grouped according to sex, year level, meal arrangement in terms of cafeteria boarder and non-cafeteria boarder, and food allowance. Regression analysis was used to determine which of the cognitions, food preferences, and the respondents' socio-demographic profile significantly predict breakfast practices.

Results and Discussion

Knowledge of the Primary Caregivers towards Immunization

Table 1 shows the extent of knowledge of the respondents regarding immunization, which is found to be high (M = 4.66; SD = 0.94). This implies that primary caregivers are well aware of important immunization information. The findings revealed that 97.2% of the respondents know that statement number 1, "Immunization not only protects my own family but also others in our community" is true. This is consistent with the study done by Fine et al. in 2011 revealing that the vaccinated population was able to protect those who were not vaccinated, known as the herd immunity. It is also stated that vaccination targeted in a susceptible population can decrease the chance of transmitting diseases to more populations at risk. A similar study also reported that there was a decreased hospitalization on children of

all age groups attributable to rotavirus after few years of vaccination. It showed that even those children that were not eligible for the vaccine showed a decline in hospitalization rates (Paulke-Korinek et al., 2011). One reason a vaccine is given as early as six weeks is because the children are susceptible to that particular disease and that they want to give early protection as possible. Whereas administering doses to older children or doses far apart gives longer immunity (Shetty et al., 2019).

Table 1
Knowledge of the Primary Caregivers Regarding Immunization

Knowledge	Percent	Standard Deviation
1. Immunization not only protects my own family but also others in our community.	97.2%	0.16
2. Immunization cannot guarantee one hundred percent (100%) protection.	49.5%	0.50
3. A child that is not immunized can infect others.	65.3%	0.48
4. The National Immunization Program of the DOH guarantees that mothers, children, elders, and youth receive the commonly recommended immunization.	87.3%	0.33
5. Vaccines are well-studied before introduced to be used by or vaccinated to the public.	89.2%	0.31
6. There is a need to schedule immunization.*	78.9%	0.41
Overall Knowledge regarding Immunization	**4.66**	**.94**

Attitudes of Primary Caregivers Towards Immunization

Table 3 depicts that generally, primary caregivers have a positive attitude towards immunization (M = 3.90; SD = .56). The statements that got the highest mean scores, exactly stated as (2) “I prefer to have my child immunized according to schedule”, followed by (6) “I recommend immunization to my community as a way of protecting the children”, succeeded by (3) “I am happy that doctors, nurses and other healthcare professionals are helpful during immunizations” with a mean and standard deviation of 4.58 (2.72), 4.47 (2.20), 4.47 (.751), respectively. These findings imply that primary caregivers positively view the value of having their children vaccinated following schedules. Furthermore, primary caregivers positively perceive immunization as child protection from preventable illnesses, as well as the altruistic behaviors of health professionals when providing vaccinations.

Interestingly, the statement that got the lowest mean score with a verbal interpretation of negative attitude is stated as (1) “I prefer to save money first before the immunization of my child”, implying that most primary caregivers prioritize their child’s immunization more as compared to saving money. It was followed by the statement that compares the preference of primary caregivers whether to have their child immunized or to acquire disease naturally, stated as (8) “It is safer to naturally acquire communicable diseases rather than be vaccinated” which is found to lie more on the preference of being immunized; and finally, statement (11) which is stated as “I worry about the vaccine used to protect my child from different kinds of diseases

that can be prevented/avoided", and interpreted as a neutral attitude, depicts that caregivers are neither positively nor negatively concerned with the vaccine used to keep their children from harmful illnesses and diseases. These statements are noted with the lowest mean scores of 2.14 (1.098), 2.35 (1.23), and 3.48 (1.131), respectively.

Kumar and Kavinprasad (2018) stated that immunization and the primary caregiver's compliance towards the immunization schedule are highly dependent on the level of knowledge about immunization and the education level attained, a higher education denotes a higher understanding of the programs and its implications to different health services provided.

Furthermore, caregivers who participated in this study have a negative attitude towards the safety of natural immunity through acquiring diseases more than having the child vaccinated. Natural immunity is good, however, for the younger population whose immune system is not yet fully developed, diseases can be serious and even deadly.

Respondents have a neutral attitude towards their level of hesitancy in immunization. The most prevalent reason for vaccine hesitancy and refusals is the confidence issue. Nevertheless, some respondents are not hesitant to vaccinate their children anymore due to the outbreak of certain diseases that may cause death but could be prevented through immunization.

Table 3
Attitudes of the Primary Caregivers toward Immunization

Attitudes	Mean	SD	Scaled Responses	Verbal Interpretation
1. I prefer to save money first before the immunization of my child.	2.14	1.10	Disagree	Negative
2. I prefer to have my child immunized according to schedule.	4.58	2.72	Strongly Agree	Positive
3. I am happy that doctors, nurses, and other healthcare professionals are helpful during immunizations.	4.47	.75	Agree	Positive
4. Time is not a problem to have my child/children immunized.	4.23	.98	Agree	Positive
5. I give my support to the leadership of the DOH in the immunization of children.	4.40	.76	Agree	Positive
6. I recommend immunization to my community as a way of protecting the children.	4.47	2.20	Agree	Positive
7. I trust the information given by healthcare professionals about immunization.	4.34	.80	Agree	Positive
8. It is safer to naturally acquire communicable diseases rather than be vaccinated.	2.35	1.23	Disagree	Negative
9. I will voluntarily have my child vaccinated by a public doctor.	4.33	.81	Agree	Positive

10. I worry about the diseases that can be avoided only through vaccination. (mumps, rabies, measles).	4.06	.99	Agree	Positive
11. I worry about the vaccine used to protect my child from different kinds of diseases that can be prevented/avoided.	3.48	1.13	Slightly Agree	Neutral
Overall Attitude	**3.90**	**.56**	**Agree**	**Positive**

Treatment Beliefs of Primary Caregivers

Table 4 reveals that respondents have neutral treatment beliefs. Primarily, they have a very high belief in the healthcare professionals and with the prevention, treatment, and care that they provide while low and neutral belief in faith or spiritual healing and herbal treatments. (M = 3.23; SD = .55). This implies that the majority of the primary caregivers believe and trust more on the healthcare professionals more than the traditional beliefs such that of faith and spiritual healing.

The first three statements which yield a high mean score are the items that describe the beliefs that doctors, treatments, and vaccinations are all effective (7) "I consult my doctor when my child/children is/are sick"; (8) "The treatment given in the hospital are more reliable and effective"; (9) "There is nothing more effective in the prevention of diseases than immunization." which provided a mean and standard deviation of 4.41 (.75), 4.32 (.77), and 4.11 (.95), respectively. This result concurred with the study done by Michigan University in 2011 which concluded that a great majority of parents specifically 76% of the participants trust doctors a lot where they get information regarding vaccination as well.

On the other hand, the bottom three which yield the lowest mean score which is interpreted as a poor belief of respondents are those that describe the belief in spiritual healing which particularly stated as (10) "Vaccine is becoming a cause of unfortunate events so I just pray for the healing of my child."; (3) "I found that the remedies given by faith healers are more helpful and safer." And (2) "Faith healers are better in determining diseases and giving cure to prevent them.". The following has a mean and standard deviation score of 2.16 (1.10); 2.46 (1.04); and 2.47 (1.10), respectively.

This is in contrast with the study done in Ghana which main findings show that most people living there usually resort to faith healing to cure diseases. Faith healers serve as the first port in the prevention and management of diseases. Despite the stigmatization and victimization of other people who do not believe in faith healing, still there are several numbers of faith healing consumers (Peprah et al., 2018).

Table 4
Treatment Beliefs of Primary Caregivers

Treatment Beliefs	Mean	SD	Scaled Responses	Verbal Interpretation
1. In the incidence of illness in the community, I take my child/children to a faith healer.	2.76	1.22	Slightly Agree	Fair

2. Faith healers are better in determining diseases and giving cure to prevent them.	2.47	1.10	Disagree	Poor
3. I found that the remedies given by faith healers are more helpful and safer.	2.46	1.04	Disagree	Poor
4. It is better that my child/children be given herbal medicine or supplement to be protected.	3.33	1.09	Slightly Agree	Fair
5. When my child/children become/s sick during a disease outbreak, I'd rather have them drink home remedies.	3.17	1.15	Slightly Agree	Fair
6. My children are used to drinking herbal juices because it is more affordable and more effective.	3.15	1.17	Slightly Agree	Fair
7. I consult my doctor when my child/ children is/are sick.	4.41	0.75	Agree	Very Good
8. The treatment given in the hospital are more reliable and effective.	4.32	0.77	Agree	Very Good
9. There is nothing more effective in the prevention of diseases than immunization.	4.11	0.95	Agree	Very Good
10. Vaccine is becoming a cause of unfortunate events so I just pray for the healing of my child.	2.16	1.10	Disagree	Poor
Overall Treatment Beliefs	**3.90**	**.56**	**Agree**	**Positive**

Immunization Practices of Primary Caregivers

Table 5 shows that respondents have a very high practice regarding BCG and Measles vaccines (M = 4.02; SD = 1.06) which are both given for one dose only with a mean and standard deviation score of 4.19 (1.03) and 3.84 (1.43), respectively. This reflects the good practices of primary caregivers in immunizing their children at the time of birth (BCG) and onwards.

Table 5
Immunization Practices of Primary Caregivers (Single Dose)

Immunization Practices	Mean	SD	Scaled Responses	Verbal Interpretation
BCG	4.19	1.03	Vaccinated	Very High
Measles	3.84	1.43	Vaccinated	Very High
Overall Immunization Practices	**4.02**	**1.06**	**Vaccinated**	**Very High**

Table 6 shows that generally, the respondents have poor immunization practices (M = 3.09; SD = .95). The first three vaccines that got the highest mean scores are DPT, Hepatitis B, and Oral Polio Vaccine (OPV) which hold a mean and standard deviation of 4.15 (1.11), 4.096

(1.174), and 4.022 (1.24), respectively. These childhood vaccinations recommended by the DOH all reflect high immunization practices.

Moreover, the top three statements that have the lowest mean scores which are interpreted as a very poor practice are Rotavirus, Varicella, and Hepatitis A vaccines, 1.68 (1.44), 1.75 (1.49), and 1.92 (1.63), respectively. This may be attributed to the fact that these three vaccinations are not routinely offered and not often accessible to all local health centers. In a study done by Weiner et.al, in 2018 regarding immunization behaviors of mothers, it shows that despite the positive beliefs and perceptions of mothers to childhood immunizations which are being associated with the intentions to immunize their child as recommended, most of them delayed the immunizations and some are undecided. The reason behind this is identified as a lack of information about the availability of vaccines from the healthcare professionals which could foster better vaccine-related knowledge and create an impact on vaccination decisions.

In a similar study, it was found out that the Expanded Program of Immunization (EPI) is not a new concept to most mothers in rural areas. However, mothers do not know the vaccination schedule that results in an incomplete vaccination of children. Some of the identified reasons were migration, busy schedule at work, the practice of not opening vaccine vials unless a sufficient number of children are needed to be vaccinated, poor interaction of women to health workers during immunization sessions, potential adverse events associated with vaccination, geographic inaccessibility of respondents during the rainy season, and lack of information (Kagone et al., 2018).

Table 6
Immunization Practices of the Primary Caregivers (Multiple Doses)

Immunizations	Mean	SD	Scaled Responses	Verbal Interpretation
HepB	4.10	1.17	Vaccinated but not the stipulated time/ Mother's history	High
DPT	4.15	1.11	Vaccinated but not the stipulated time/ Mother's history	High
HiB	3.66	1.50	Vaccinated but not the stipulated time/ Mother's history	High
OPV	4.02	1.24	Vaccinated but not the stipulated time/ Mother's history	High
PCV	2.73	1.74	Incomplete Doses	Poor
RV	1.68	1.44	Not Vaccinated	Very Poor
MMR	3.85	1.38	Vaccinated but not the stipulated time/ Mother's history	High
Varicella	1.75	1.49	Not Vaccinated	Very Poor
HepA	1.92	1.63	Not Vaccinated	Very Poor
Overall Immunizations	**3.09**	**0.95**	**Incomplete Doses**	**Poor**

Relationship of Knowledge with Immunization Practices

Table 7 shows the relationship between knowledge of immunization and immunization practices. The relationship between knowledge and immunization is found to be not significant with a p-value of .460 ($p > 0.05$) and r value of -.041. This is not congruent with the findings of Rogers et al. (2018), that knowledge alone may not be enough to increase immunization uptake. On the other hand, this is in contrast with the findings presented by some studies. According to Eugenio and Carlos (2017), knowledge of parents regarding immunization is directly proportional to vaccine coverage.

Table 7
Relationship Between Knowledge and Immunization Practices

Variable	Immunization Practices				
	r	Qualitative Description	p-value	Decision	Remark
Knowledge	-.041	--	.460	Accept Ho	Not significant

Legend:0.90-1.00 Very high/ very significant, 0.60-0.89 High, 0.40-0.59 Moderate, 0.10-0.39 Low, 0.00-0.09 Very low/ negligible
***Correlation is significant at the 0.05 level*

Relationship of Attitudes with Immunization Practices

Table 8 reveals the relationship between primary caregivers' attitudes with immunization practices. With the p-value of .246, the relationship between attitudes and immunization practices is not significant ($r = -.065$, $p > 0.05$). This is congruent with the findings stating that the attitudes about the value and risk may play a significant role in practices (Rogers et al., 2018). In addition, the majority show favorable and positive attitudes toward immunization (Cvjetkovic et al, 2017; Ricco et al., 2017).

Table 8
Relationship of Attitudes with Immunization Practices

Variable	Immunization Practices				
	r	Qualitative Description	p-value	Decision	Remark
Attitude	-.065	--	.246	Accept Ho	Not significant

Legend:0.90-1.00 Very high/ very significant, 0.60-0.89 High, 0.40-0.59 Moderate, 0.10-0.39 Low, 0.00-0.09 Very low/ negligible
***Correlation is significant at the 0.05 level*

Relationship of Treatment Beliefs with Immunization Practices

The relationship existing between the treatment beliefs of the primary caregivers of children age 0-6 years old and their immunization practices are depicted in Table 9. Results revealed that a p-value of .002 ($p < 0.05$) implies that the null hypothesis is rejected. Furthermore, this study reveals a low significant relationship between treatment beliefs and immunization practices among primary caregivers. Furthermore, treatment beliefs are found to be negatively correlated with immunization practices implying that as the treatment beliefs of the primary caregivers increases, their practices in immunization decreases ($r = -.174$).

Variable	Immunization Practices				
	r	Qualitative Description	p-value	Decision	Remark
Treatment Beliefs	-.174**	Low Negative Relationship	.002	Reject Ho	Significant

Legend:0.90-1.00 Very high/ very significant, 0.60-0.89 High, 0.40-0.59 Moderate, 0.10-0.39 Low, 0.00-0.09 Very low/ negligible
***Correlation is significant at the 0.05 level*

Consistent with the summary report released by the Swiss Centre for International Health, one obstacle faced by effective utilization of preventive services such that of immunization is the local health beliefs held by society. Furthermore, this literature review revealed that obstacles encountered in immunization are associated with both culture and ethnicity, primarily with the predominance of ethnomedical beliefs (Hilber et al., 2010). Also, according to Paek et al. (2015), health beliefs seemed to play a much stronger role than knowledge in predicting vaccination intention.

Conclusion and Recommendation

The research findings show that most of the primary caregivers are 39 and above, females, married, high school graduate, Roman Catholic, and mothers. Generally, they have high knowledge, a positive attitude, and very good treatment beliefs towards immunization. With regards to immunization practices, they have a very high practice in single-dose vaccines while poor practice on multiple-dose vaccines. The relationship of knowledge and attitude with immunization practices is very low or has a negligible negative relationship while treatment beliefs are found to be negatively correlated with immunization practices.
Guided with the significance, as well as the findings and conclusions drawn from this study, the following recommendations are highlighted:

1. Maintain and further enhance the knowledge of the primary caregivers through health programs and informational materials (e.g. pamphlets, commercials, school caravan, barangay seminars).
2. Developing activities to creatively provide the primary caregivers an avenue of learning the risks and benefits of immunization and increase their generally positive attitude towards it.
3. Establishing ways of strengthening and extending the available programs, providing

opportunities on making it more accessible and activities or advertisements that could emphasize the importance of immunizations.

4. Advertisements should take different forms that could reach not just literate people but also those who are not capable of reading and comprehending complex lectures/ materials. This way, the free immunizations provided by the government would be of greater use and would fulfill the objectives emphasized by these programs.
5. Conducting regular surveys about sociodemographic factors as a moderator in immunization practices which will enhance data systems and record-keeping in the public healthcare.
6. Empowerment of the Filipino people to make an impact on their communities as a leading advocate of maintaining childhood immunization and public healthcare through counseling and positive psychology.

References

Adefolalu (2019). Maternal knowledge, attitude and compliance regarding immunization of under five children in Primary Health Care centres in Ikorodu Local Government Area, Lagos State. *Journal of Clinical Sciences, 16*(1), 7-14. doi:10.4103/jcls.jcls_55_18

Adeyinka, D. A., Oladimeji, O., Adeyinka, F. E., & Aimakhu, C. (2009). Uptake of childhood immunization among mothers of under-five in Southwestern Nigeria. *Internet Journal of Epidemiology, 7* (2), 13. https://www.researchgate.net/profile/Olanrewaju_Oladimeji/publication/236904933_Uptake_Of_Childhood_Immunization_Among_Mothers_Of_Under-Five_In_Southwestern_Nigeria/links/02e7e51a37df01e789000000/Uptake-Of-Childhood-Immunization-Among-Mothers-Of-Under-Five-In-Southwestern-Nigeria.pdf

Cabico, G.K. (February 2019). *How the Dengvaxia scare helped erode decades of public trust in vaccines.* https://www.philstar.com/headlines/2019/02/06/1891084/how-dengvaxia-scare-helped-erode-decades-public-trust-vaccines

Cvjetkovic, S., Jeremic, V. & Tiosavljevic, D. (2017). Knowledge and attitudes toward vaccination: A survey of Serbian students. *Journal of Infection and Public Health, 10*(5), 649-656. https://doi.org/10.1016/j.jiph.2017.05.008

Daley, M., Glanz, J., & Kraus, C., (2015). Addressing parental vaccine concerns: engagement, balance and timing. *Plos Biology, 13*(8). doi: 10.1371/journal.pbio.1002227

De Vera, J. S. (2017). Alternative medicine and health care practices of the community people of Alaminos City, Pangasinan, Philippines. *PSU Journal of Education, management and Social Sciences, 1*(1), 52-59. https://psurj.org/wp-content/uploads/2018/01/JEMSS_0009.pdf

Eugenio, C. & Carlos, C. (2015). *A cross sectional study on the relationship between parental demographics and knowledge on vaccine preventable disease and immunization practices; and the immunization completeness of their children.* from https://www.stlukes.com.ph/health-library/research-and-biotechnology/a-cross-sectional-study-on-the-relationship-between-parental-demographics-and-knowledge-on-vaccine-preventable-disease-and-immunization-practices-and-the-immunization-completeness-of-their-children

Eugenio, C. & Carlos, C. (2017). *A cross sectional study on the relationship between parental demographics and knowledge on vaccine preventable disease and immunization practices; and the immunization completeness of their children.* St. Luke's Medical Center. https://www.stlukes.com.ph/health-library/research-and-biotechnology/a-cross-sectional-study-on-the-relationship-between-parental-demographics-and-knowledge-on-vaccine-preventable-disease-and-immunization-practices-and-the-immunization-completeness-of-their-children

Fine, P., Eames, K., & Heymann, D. L. (2011). "Herd immunity": A rough guide. *Clinical Infectious Diseases, 52*(7), 911–916. Retrieved on August 28, 2019 from https://doi.org/10.1093/cid/cir007

Habib, R. F., Alsubhi, R. A., & Saadawi, D. W. (2018). Assessment of knowledge, attitude and practice of parents towards immunization of children in Saudi Arabia. *The Egyptian Journal of Hospital Medicine, 71*(2), 2585–2589. https://doi.org/10.12816/0045660

Hilber, A., Capblanch, X., Schindler, C., Beck, L., Secula, F., … Merten, S. (2010). Gender and immunisation: Summary report for SAGE, November 2010. *Swiss Tropical and Public Health Institute.* from https://www.who.int/immunization/sage/1_immunization_gender_reports_without_graphics.pdf

Kagoné, M., Yé, M., Nébié, E., Sié, A., Müller, O., & Beiersmann, C. (2018). Community perception regarding childhood vaccinations and its implications for effectiveness: a qualitative study in rural Burkina Faso. *BMC Public Health, 18*(1). doi: 10.1186/s12889-018-5244-9

Kumar, P. R. T. & Kavinprasad, M. (2018). A study to assess the parent's knowledge and attitudes on childhood immunization. *International Journal Of Community Medicine And Public Health, 5*(11), 4845. doi: 10.18203/2394-6040.ijcmph20184582

Paulke-Korinek, M., Kundi, M., Rendi-Wagner, P., de Martin, A., Eder, G., Schmidle-Loss, B., … Kollaritsch, H. (2011). Herd immunity after two years of the universal mass vaccination program against rotavirus gastroenteritis in Austria. *Vaccine, 29*(15), 2791–2796. Retrieved on September 16, 2019 from https://doi.org/10.1016/j.vaccine.2011.01.104

Paek, H.-J., Shin, K.-A., & Park, K. (2015). Determinants of caregivers' vaccination intention with respect to child age group: A cross-sectional survey in South Korea. *BMJ Open, 5*(9). https://doi.org/10.1136/bmjopen-2015-008342

Peprah, P., Abalo, E. M., Nyonyo, J., Okwei, R., Agyemang-Duah, W., & Amankwaa, G. (2018). Pregnant women's perception and attitudes toward modern and traditional midwives and the perceptional impact on health seeking behaviour and status in rural Ghana. *International Journal of Africa Nursing Sciences, 8*, 66–74. doi: 10.1016/j.ijans.2018.03.003

Ricco, M., Vezzosi, L., Gualerzi, G., & Signorelli, C. (2017). Knowledge, attitudes and practices (KAP) towards vaccinations in the chool settings: an explorative survey. *Journal of Preventive Medicine and Hygiene, 58*(4), E266-E278. doi:10.15167/2421-4248/jpmh2017.58.4.673

Rogers, C.J., Bahr, K.O., & Benjamin, S.M. (2018). Attitudes and barriers associated with seasonal influenza vaccination uptake among public health students; a cross-sectional study. *BMC Public Health, 18*(1), 1131. Retrieved on December 4, 2019 from https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-018-6041-1

Šeškutė, M., Tamulevičienė, E., & Levinienė, G. (2018). *Knowledge and attitudes of postpartum mothers towards immunization of their children in a Lithuanian tertiary teaching hospital.* Medicina.https://doi.org/10.3390/medicina54010002

Shetty, V. U., Chaudhuri, P., & Sabella, C. (2019). Rationale for the immunization schedule: Why is it the way it is? *Pediatrics in Review, 40*(1), 26–36. https://doi.org/10.1542/pir.2018-0033

World Health Organization (2017). *Philippines-WHO Country Cooperation Strategy 2017-2022.* https://iris.wpro.who.int/bitstream/handle/10665.1/13584/WPRO-2017-DPM-003-eng.pdf

World Health Organization (2019). *WHO vaccine-preventable diseases: Monitoring system.2019 Global Summary.* https://apps.who.int/immunizationmonitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D=PHL

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