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Mary Anne Grace M. Dorado and Leonardo B. Dorado

Abstract

Studies on play therapy in other disciplines have been done but post-operative pain management in pediatric patients has not been considered. This study determined the effects of play therapy using storytelling, bubble blowing, singing and film viewing on the pain management of post-operative pediatric patients. The single-group pretest-posttest design was employed. Post-operative pediatric patients of the orthopedic ward ages 2-7 years old assessed to have acute pain were chosen; seven out of 12 patients qualified and were given a pretest to assess the level of pain. The level of pain was assessed before and after the intervention with the use of Wong-Baker FACES Pain Rating Scale, FLACC (Face, Legs, Activity, Cry, Consolability) Technique Scale to assess the behavior and assessment of the vital signs. Play was used as the intervention and significant differences in the level of alleviated pain using self-assessment was computed by getting the decrement level of pain from pre to post assessment and subjecting it to the Kruskal-Wallis test. Storytelling was found to be the most effective resulting to lowered respiratory rate, heart rate and a normal blood pressure reading; however, it did not prove statistical significance as indicated by p -values greater than the 0.05 alpha level. Computed W coefficients associated with p -values revealed that pre-assessment data results were statistically different from the post-assessment data results in terms of self, behavioral and physiological assessments across the four types of play. The pain decrement from the pretest to posttest was statistically significant. A pain management program was proposed.

Keywords: *play, play therapy, post-operative pediatric, assessment, pain*

Pain in pediatric patients has historically been undertreated/untreated medical problem. Study after study finds that pain is treated less aggressively in the pediatric patient because health care providers just do not believe that the patients are in pain because they do not “look” like they are in pain. Joint Commission on Accreditation of Healthcare Organizations (JCAHO) regard pain as “the fifth vital sign” and requires the hospital and medical staff to treat the patient’s pain through pharmacologic or non-pharmacologic approaches. Pain should be treated preemptively and nurses must be alert for continuing pain at the same time try to manage the pain children experienced following surgery. This can be possible through play therapy as an intervention. Play Therapy provides a way for children to express their experiences and feelings through a natural, self-guided and self-healing process. Studies directed on medical play in the operating room several days before surgery which decreased significantly the children’s anxiety (Li & Lopez 2008), and some form of medical

play involving child life specialists occurring in a pediatrician’s office which resulted to decreased blood pressure and pulse rates (Burns-Nader et al, 2013).

Children’s experiences and knowledge are often communicated through play. Play is an important tool for children to achieve optimal growth and development. But this activity is often taken for granted during their hospital stay and much more when children are in pain during completion of hospital-related procedures. Comparable studies done by Taylor, et al, (2008), Groenewald, (2012), and Stevens BJ, 2012 indicated that significant number of children experience moderate to severe pain during their hospitalization. The issue has been some medical professionals do not take into account the differences in the ways pediatric patients communicate with their surroundings, as well as the dynamics of adult/child relationships. Moreover, recent studies are alarming that despite increasing knowledge of non-pharmacologic effective pain management for hospitalized pediatric

patients, actual pediatric pain management remains suboptimal.

Determining a specific pain assessment to be used is challenging. There has been a broad swing away from the conventional wisdom on pediatric pain towards a more balanced and scientific assessment based approach. Pain levels, according to the Nursing Show site for nurses by nurses, is measured through: First, Self-measurement (numeric or pictorial scales, verbal description) such as the Wong-Baker FACES Pain Rating Scale which can be used by children from the age of three to 8 years (Myrvik et al., 2015). Second, Behavioral Assessment/FLACC scale (face, legs, activity, cry, consolability). Wessman & McDonald (1999) elaborated that Behavioral Assessment is an assessment of behavior in response to potentially painful procedures or stimuli. The FLACC scale is given value score of 0, 1 or 2 based on the response or assessment. A score of 0 to 10 is the result, with 0 = little to no pain and 10 = high level of pain. This is recommended for hospital use in postoperative pain (Merkel et al., 1997). Third, Physiologic Assessment (vital signs, diaphoresis), however, may not be as reliable if it is used alone as an assessment and non-specific. This should be analyzed with the rest of the pain assessment scale. Managing pain involves working within that patient's pain scale. The challenge, therefore, is for the medical professionals to remain objective and not impose their pain tolerance or lack of tolerance over the patients. Simply assessing and recording pain level consistently, using the same measurement tools will give the providers the information they need to treat the patient. Children may not be able to understand the source of the pain, may not be able to communicate its level and quality, or respond to adult assessment techniques.

Play is a form of self-expression and communication between the patient and the staff, while in the process of series of emotions (Kourkouta et al., 2014) and helps them cope with their difficulties (Brown, 2014). Benefits of play can be part of a healthcare plan (Dos Santos et al., 2014). Medical staff may play with the pediatric patients, e.g., prior to surgery, contributing to a decrease in their anxiety (Ghabeli et al., 2014) and creating a good relationship, the so-called therapeutic alliance. The Joint Commission on the implementation of

their enhanced pain assessment and management standards effective January 2018 requires all accredited hospitals to provide non-pharmacologic pain treatment modalities. This study has included film-viewing, singing, bubble-blowing, and storytelling as the forms of play. Often children have difficulty verbalizing their feelings when directly questioned, either because they are guarded or they do not connect with feelings they find most threatening. When involved in playing a game, children's defenses are reduced, and they are more likely to talk about their feelings. Play Therapy allows children to communicate their feelings in an enjoyable, non-threatening manner. One government hospital in Davao City, with a pediatric orthopedic ward was used to execute this research. It is one of the most populated wards as it also houses a separate ward for adults, spinal ward for adults, and a separate air conditioned ward for pediatric patients. All these are under one nurse's station with three to four nurses on duty every shift. It was observed in several instances in the pediatric ward that child-patients experience acute pain after surgery and they become restless expressing their pain by crying. In these instances, parents and nurses assigned cannot do something to alleviate the pain the child was experiencing. Nurses had to wait for the appointed time to give the pharmacologic management to relieve the child of the pain. Probably, the children can be temporarily distracted from their pain by the introduction of some intervention; in this case – the play therapy. It was in this view, that the researcher determined the effects of the Play Therapy on the Pain Management of the Post-operative pediatric patients at the chosen hospital. Specifically, it sought to determine the level of pain during the pre-assessment and post-operative procedure when classified according to Self-assessment, Behavioral assessment, and Physiological assessment, the significant difference in the level of pain when classified according to singing, storytelling, film-viewing and bubble blowing; and its effect in the management of pain. On the basis of the findings, it proposed a pain management program with the use of Play.

Methodology

The single-group pretest-posttest Design was

employed in this study. The group of subjects was first given a pretest followed by the experimental treatment factor then a posttest was administered. The different effects of treatment between the pretest and posttest score were compared. This design is the most appropriate for this study since the researcher hoped to determine the possible effects of the play therapy (treatment) to the pain management of the post-operative pediatric patients in the orthopedic ward. The subjects of this study were the post-operative pediatric patients of the surgery ward ages 2 to 7 years old, with acute pain brought about by post operative orthopedic procedures, within 3-5 days post operatively. The data indicates that from the time this study has been conducted 12 patients were admitted in the hospital and only 7 out of 12 qualify to the criteria set for the selection of the subjects. Majority or 57% of the respondents fell in the 6-7 bracket and 57% of the subjects were male. Purposive sampling was used to determine the type of respondents for this study. Two sets of instruments were used in the study. First, was a checklist adopted to assess the level of pain of post-operative pediatric patients in the orthopedic ward before and after the intervention was introduced. Second, were researcher-selected and made play therapy materials for the pain management of the patients. The Assessment checklist were validated through face validation and input of the significant others such as parents and guardians of the subjects. The assessment checklist has three parts: Self-measurement. The visual measurement scale like the Wong-Baker FACES Pain Rating Scale was the instrument used in assessing the pain of the patients. The pictorial scale was specifically used in the gathering of data through observation and interview of play therapy. Behavioral assessment. The FLACC technique scale is based on the mnemonic device which stands for Face, Legs, Activity, Cry, and Consolability and given value score of 0, 1, or 2 based on the response assessment. A scoring method of 0 to 10 was utilized, with 0 = little to no pain and 10 = high level pain for the physiological assessment. In this assessment, the pediatric vital signs were monitored before and after the introduction of the intervention. Such interventions were singing, story telling, bubble blowing; and film viewing. These materials were selected and made by the researcher using several references (University of Michigan

Health System, 2008).

Experimental Procedures

Permission was sought from the Ethics Committee of Davao Medical Center. Selection of respondents and sampling method was done and a letter of consent was sent to the parents of the patients who were selected. The experimental procedure was started. In the pre-assessment, the subjects were observed when they were in pain with the use of the assessment tool. The subjects were assessed in terms of self-assessment, behavior assessment and physiological assessment. The assessment included the use of pictorial scales as validated by parent's observation on their child's reaction to pain, (observation of the child's facial expressions manifested as facial grimace or quivering chin), the positions of the legs, the activities of the child in pain, (whether they were jerking or squirming, the cry of the child), and the child's reaction when consoled by parents or the caregivers. These reactions served as the pre-assessment. After the observations were made, the therapist (researcher) introduced a single type of play at a time and conducted it for 30 minutes for 18 days; however, play therapy was not done daily due to the fact that the researcher has to wait until subjects experienced acute pain. Storytelling was introduced since it can be used as a tool to build rapport with the patient at the same time it was used as a distracter. It enabled the child to interact and participate with the story being told by mimicking the sounds made by the characters of the story. With this type of play, the patient has the choice to participate or to just listen to the story while the patient is starting to build interpersonal relationship. It was followed by bubble-blowing which distracted the child by blowing and blowing the bubbles as if he/she is blowing the pain away and became so fascinated by chasing the bubbles endlessly within their reach. This enabled the researcher to penetrate to the innermost feelings of the patient by joining the child to poke the bubbles, and ends up befriending the patient. This would prepare the patient to further participate to the next play therapies, film-viewing and singing, respectively, without hesitation. Film-viewing was done inspiring the patient to imagine things and be one with the characters of the story on the film viewed. The child was then asked to

describe what the story was all about in his own understanding. This, primarily, would allow them to focus their attention to the film, thereby distracting them from the pain they initially felt. Singing was the last type of play used as this needs the child's full cooperation. The child has to fully trust the nurse researcher before it can be carried out and participated in by the child. The nurse researcher sang a song and showed the hand actions which are needed. Every hand gesture of the action song was taught to the child until s/he learned to sing the song and showed his/her hand gestures. The child was not corrected for any mistakes made because the mere participation meant a distraction from pain.

Analysis of the Data

Due to the small sample size and the ordinal level of data used in the study, the nonparametric statistics was utilized to ensure reliability and accuracy in the interpretation. The post-assessment were conducted one-two minutes after the treatment was done. Group comparisons were performed using the Wilcoxon-Signed Ranked Test, and Kruskal-Wallis Test. The statistical tests were run with the use of the Statistical Packages for Social Sciences (SPSS) Version 15. The Median score was also obtained wherein it is one measure of central tendency appropriate for ordinal data. In the study, this test measurement was used to get the usual or common pain level suffered by the pediatric patients. The Wilcoxon-Signed Ranked Test was also used. This is a nonparametric statistical test used to evaluate significant difference between two related samples. In this study, it was used to evaluate significant difference between pre-assessment data and post assessment data. The Kruskal-Wallis Test was also used. This statistical test is a non-parametric test used to evaluate significant difference among independent samples. This test was used to evaluate the significant difference in the effectiveness of the four types of play therapy in the management of pain.

Results and Discussions

Table 2 shows the level of pain during the pre-assessment of the post-operative pediatric patients at the orthopedic ward in terms of Self-assessment. It was done before performing any of the four different types of play therapy. In terms of facial assessment, majority of the patients suffered high level of pain ranging from high to severe level of pain as indicated in their facial expression. The results of the study reveals that there was no significant difference ($p = .563$) in the level of pain during the pre-assessment of the post-operative pediatric patients in terms of self-assessment. Studies revealed that if a child is scowling, wincing, screwing up their face, or holding their mouth tightly shut or out crying, the child may be experiencing pain. If the child begins using words for pain, even if s/he seems to be at non-specific times, the child may be experiencing pain (Faulds & Moore, 2006).

Table 2.

Level of Pain During the Pre-assessment of the Post-Operative Pediatric Patients in terms of Self-assessment

Type of Play									
Pain Assessment	Singing		Story-Telling		TV-Viewing		Bubble Blowing		<i>p</i> -value
Self-Assessment	Median	Verbal Descriptor	Median	Verbal Descriptor	Median	Verbal Descriptor	Median	Verbal Descriptor	
Pictorial Scale	8	Painful	10	Severe	8	Painful	8	Painful	0.563
Verbal Description	4	High Level Pain	5	Very High Level Pain	4	High Level Pain	4	High-Level Pain	0.313

Table 3 shows the level of pain of the patients during the pre-assessment of the post-operative pediatric patients in terms of behavioral assessment. The data indicates under behavioral assessment, that prior to the intervention of the play therapy most of the patients elicited frown look with quivering chin and uneasy legs. They also exhibited tensed or squirming behavior due to the pain they experience. The painful feeling brought them to cry or scream steadily yet they were reassured by occasional touch, hug or encouraging words from their parent or relative. Crying and quivering chin are the most common behavior manifested by the children in pain. This study demonstrated the importance of examining attitudes about children’s pain relief.

Table 3.
Level of Pain During the Pre-Assessment of the Post-Operative Pediatric Patients in Terms of Behavioral Assessment

Type of Play									
Behavioral Assessment	Singing		Story-Telling		TV-Viewing		Bubble Blowing		p-value
	Median	VD	Median	VD	Median	VD	Median	VD	
Face	1	frown	2	Quivering chin	2	Quivering chin	1	frown	0.291
Legs	1	Uneasy	1	Uneasy	1	Uneasy	1	Uneasy	0.522
Activity	1	Squirming	1	Squirming	1	Squirming	1	Squirming	0.568
Cry	2	Crying steadily	2	Crying steadily	2	Crying steadily	2	Crying steadily	0.629
Consolability	1	reassured	1	reassured	1	reassured	1	reassured	0.568

Table 4 shows the Level of Pain during the Pre-assessment of the Pediatric Patients in terms of Physiological Assessment. The results revealed that there was no significant difference in the level of pain during the pre-assessment of the post-operative pediatric patients in therms of physiological assessment. The physiologic assessment was done by determining the blood pressure, heart rate and respiratory rate of the participants. Comparison of the physiologic assessment parameters showed that the blood pressure (p - .420), heart rate (p - .888), and respiratory rate (p - .939) did not significantly differ among the participants.

Table 4.
Level of Pain during the Pre-Assessment of the Post-Operative Pediatric Patients in Terms of Physiological Assessment

Type of Play									
Physiological Assessment	Singing		Story-Telling		TV-Viewing		Bubble Blowing		p-value
BP	2	Normal	2	Normal	2	Normal	2	Normal	0.420
HR	139	>Normal	136	>Normal	138	>Normal	140	>Normal	0.888
RR	42	>Normal	40	>Normal	42	>Normal	40	>Normal	0.939

All patients have normal blood pressure level; however, heart rate and respiratory rate were all above the normal level. All of these observations were true to all patients prior to any play intervention rendered. These measures may be currently useful index of pain in the intraoperative setting but are non-specific according to National Hospice and Palliative Care Organization. Indeed, statistics showed that pre-assessment results are homogenous among patients across the four types of play. The homogeneity of results was based on the obtained p-values all greater than the 0.05 level of significance. Homogeneity test was performed using Kruskal-Wallis non-parametric statistics.

Table 5 shows the level of pain during the Post-Assessment of the Post Pediatric Patients in terms of Self-Assessment.

Table 5.

Level of Pain During the Post-Assessment of the Post-operative Pediatric patients in Terms of Self Assessment.

Type of Play									
Pain Assessment	Singing		Story-Telling		TV-Viewing		Bubble Blowing		<i>p</i> -value
Self-Assessment	Median	VD	Median	VD	Median	VD	Median	VD	
Pictorial Scale	0	No expression	0	No expression	0	No expression	0	No expression	0.10
Verbal Description	1	Very low	1	Very low	1	Very low	1	Very low	0.56

Post-assessment of the post-operative pediatric patients was done after each type of play has been rendered to the patients. Results revealed that the median scores of the level of pain shown in the facial expression of the patients beforehand are significantly alleviated after each play has been enjoyed by the patients. The great alleviation of pain was noticeable as indicated by the low level of facial grimness and behavioral expressions based on the parents' and researcher's assessment. The games which reduced anxiety of hospitalized children are effective strategy in reducing fright, relieving tension and managing pain in children during any hospital procedures. Children then began to collaborate during the procedure, showing more willingness to help spontaneously. They smiled while playing. Overcoming their fear and tension, play becomes an important occasion to communicate and re-obtain some normality in their life (Scarponi, 2014).

Table 6 shows the level of pain during the post-assessment of the post-operative pediatric patients in terms of Behavioral Assessment. The pediatric patients were more relaxed, there were no longer crying and screaming observed and both heart rate and respiratory rate went back to normal level. All of these improvements in the patient's behavior were consistent to each application of the four types of play therapy. The Play Therapy session enabled the child to better understand the need for the procedure and begin to cooperate more with the needed procedures. It is believed that reduction in pain results from the fact that toys create pleasure and distraction, relieving child stress and consequently, pain. At this moment, the healing function of playing is clearly evidenced, acting as a source of relief and reducing child anxiety (Paulo, 2007).

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Abstract

Studies on the implications brought about socioeconomic and breastfeeding practices are not sufficiently explored in the Philippines. The aim of the study was to explore the breastfeeding experiences among Filipino women with high socioeconomic status, as well as their needs in order to initiate and continue breastfeeding. The study utilized qualitative research method. Six participants participated in the study and were selected using snowball sampling. A semi-structured interview was done to obtain relevant information about the study. Colaizzi’s method was used to analyze the collected data. The study specifically explored the following: (a) perceptions of mothers about breastfeeding, (b) breastfeeding experience of mothers, and (c) needs of the mothers in order to breastfeed successfully. The themes that emerged based on the mother’s perception is that breastfeeding is difficult and best for infants and mothers. The mother’s experiences also made them to plan breastfed antenatally and to balance employment. They also received support from their families, peer group and workplace. The identified needs of the mothers in order to breastfeed successfully were determination, family support and education about breastfeeding. The researchers recommend that future studies should look into the specific knowledge deficiency of mothers, particularly those of high socioeconomic status regarding breastfeeding; and develop an extensive breastfeeding education program for health care professionals, pregnant and breastfeeding women, and family members.

Keywords: *breastfeeding, nursing mothers, socio-economic status, educational status*

Breastfeeding is globally known to be the optimal source of nutrition for infants as it reduces diarrhea and pneumonia mortality rates and provides protection against chronic non-communicable diseases (Kelishadi & Farajian, 2014; Martin, Ling, & Blackburn, 2016; Victora & Horta, 2013). It has also been postulated that the content of mother’s milk and the mother-child attachment maintained through breastfeeding may have an impact on intelligence because cognitive performance is enhanced in infants who were breastfed continuously (Kafouri et al., 2013; Victora et al., 2015). The current goal of the Collective is to increase early breastfeeding initiation to 70% globally (WHO, 2017). However, the World Health Organization (WHO) revealed that rates of early initiation of breastfeeding is only at 44% worldwide while exclusive breastfeeding at zero to five months is only at 40% globally (WHO, 2015). In the Philippines, only half of infants born are breastfed within an hour of their birth while only 34% of infants are breastfed exclusively at zero to

five months (WHO, 2015).

In 2013, the Philippine National Demographic and Health Survey (PNDHS) established that children in the rural areas are breastfed significantly longer than children who live in urban areas. The PNDHS also discovered that the duration of breastfeeding is negatively related to the mother’s wealth status and educational attainment (PNDHS, 2013); these findings are similar to the trends that PNDHS published in 2003. The purpose of this study was to examine multiple dimensions of socioeconomic status and its impact on breastfeeding experiences among Filipino women, as well as their needs in order to initiate and continue breastfeeding. All over the world, socioeconomic status has had a great bearing on a woman’s decision to breastfeed or not to breastfeed and has had a noteworthy impact on when and for how long they will breastfeed. Therefore, it is necessary to conduct this research because the impact of high socioeconomic status in breastfeeding practices in the Philippines has not

been addressed in existing literature.

Despite the availability of infant and young child feeding counseling in all primary healthcare facilities in the Philippines, the breastfeeding rates are still low (WHO, 2015). Breastfeeding barriers among Filipino women have been explored and have been identified in previous studies. It has been confirmed that in developed countries, such as the United States and Australia, that higher socioeconomic status is positively correlated to better breastfeeding practices (Heck, Braveman, Cubbin, Chavez, & Kiely, 2006). However, these results do not directly translate to developing countries such as the Philippines due to differences in culture, economy, and societal norms. The implications brought about by specific socioeconomic factors and breastfeeding practices have not been sufficiently explored.

This study intends to determine the breastfeeding experiences of mother's of high-economic status. Specifically this study sought to answer the following questions:

- 1) What are the perceptions of mothers about breastfeeding?
- 2) What are the breastfeeding experiences of mothers?
- 3) What are the needs of mothers in order to breastfeed successfully?

Methodology

Research Design

Qualitative phenomenological research design was used in this study. The intention of the qualitative phenomenological design is to describe as well as understand the phenomenon rather than foreseeing and controlling the phenomena being studied (Jamshed, 2014). Creswell (2014) also stated that the goal of the qualitative phenomenological research is to interpret and document the whole phenomenon from one person's perspective. Waters (2017) also defined a qualitative phenomenological research as a lived experience of a phenomenon which focuses on the participant's experience and behavior. The participants for the study were mothers who either breastfed or did not breastfeed. The researchers conducted in-depth interviews using semi-structured questions with the participants.

Participants and Sampling Technique

Snowball sampling was used for the selection of mothers who either breastfed or did not breastfed. Snowball sampling is recommended when the population cannot be strictly delimited or detailed; the characteristics of the sample are rare (difficult to identify or find); the study is on behaviors, perceptions, customs (Dragan & Isaic-Maniu, 2013).

A total of six participants were chosen based on their socioeconomic status in terms of employment, income, and highest educational attainment, as well as the age of their youngest child which must be one year old or younger. Participants must have either a net income of at least Php 2,400,000 per year, a Master's degree and a professional occupation belonging to Skill Level 4 of ISCO-08, or both; and a child of age two years old or below. Selecting mothers to be interviewed for this study was purposeful, in that they either breastfed or never have breastfed, and understand experiences of women of high socioeconomic status and what their needs are. Participants were requested to recruit other participants for the study until a saturation point is reached. In the end, the researchers were able to utilize six participants.

Instrumentation

The study utilized a semi-structured questionnaire in order to obtain the perceptions of mothers about breastfeeding, the breastfeeding experiences of mothers and the needs of mothers in order breastfeed successfully. An interview was conducted by the trained interviewers in the residences of the participants. As part of the data gathering procedure the interviewer also took noted of the non-verbal cues. An audio recorder was also utilized to record the whole interview procedure. A synthesis of the interview was also created and was relayed back to the participants prior to the interpretation of data in order to confirm the initial findings of the researchers.

Ethical Consideration

The research approval was received from the Adventist University of the Philippines to conduct the study. Key informants were briefed on the objective of the study and an informed consent was also secured before administering any of the

was utilized in the analysis of this study. The following summarized the steps necessary for the evaluation of the gathered data:

1. *Transcription of subject descriptions.* All participant descriptions were transcribed from audio-taped interviews conducted with each individual. According to Colaizzi (1978 as cited in Edward & Welch, 2011), the narratives do not have to be transcribed precisely or verbatim, but the core of the descriptions must be communicated accurately. The transcriptions of the interviews must be validated by the corresponding participant.
2. *Extraction of substantial statements.* Any statements that relate to the phenomenon being studied are considered important. These statements are then extracted from the participants' narratives and assembled into a list (i.e. 1, 2, 3, 4...) of all significant statements.
3. *Creation of formulated meanings.* Colaizzi (1978 as cited in Edward & Welch, 2011) suggests that the researcher attempt to generate more general summaries or implications for each of the listed substantial statements that were extracted from the narratives of the participants.
4. *Aggregation of formulated meanings into theme clusters.* Colaizzi recommends that the researcher systematize or arrange the formulated meaning into groups of comparable type (Edward & Welch, 2011).
5. *Development of an exhaustive description.* An exhaustive description is a comprehensive account of the communicated experiences of the participants, which is created in this stage.
6. *Identification of the fundamental structure of the phenomenon.* The fundamental structure, which is the essence of the experiential phenomenon revealed through exposition, can be identified through the rigorous analysis of the exhaustive description of the phenomenon.
7. *Validation by returning to participants.* A supplemental appointment was made between the researcher and every participant for the validation of the essence of the phenomenon. Modifications were made based on the feedback of the participants to guarantee that the intended meaning in the fundamental structure of the phenomenon is correctly conveyed. Additional

The interview was held where the participants deemed comfortable. The participants were individually interviewed for 30-45 minutes. They were allowed to speak in English or Tagalog to effectively communicate their thoughts and feelings without language barriers, while the conversations were voice recorded for easy transcription. Back translation was applied for the translation of Tagalog answers to English. Afterwards, interviews were held for any significant other that the participants recommended for triangulation and were given ample time to respond to the questions asked. Lastly, the researchers asked each participant to recommend a different person that fits the criteria who would be willing to be interviewed. Through the informants' recommendations, the succeeding participants were found.

The participant descriptions of this study were transcribed and translated into English after all the 30 to 45-minute interviews. Colaizzi's Method

information provided by the participants were also included into the final description.

Results and Discussion

A total of six participants consented to participate in the study. Data analysis procedures began after the audio recording of the interviews were transcribed and translated by a professional from Filipino to English. Data reduction started with multiple readings and studies of the transcripts. Themes emerged with the initial readings of the transcripts. The emergent themes generated from this study are as follows: (a) mothers perceptions about breastfeeding, (b) breastfeeding experience of mothers, and (c) needs of the mother in order to breastfeed successfully.

Mothers' Perceptions of Breastfeeding.

According to UNICEF (2013), breastfeeding allows the child to reach his or her ideal nutrition and, at the same time, reduces infant mortality rates. Because of this known fact, many mothers perceive breastfeeding to be best for their children, especially during the first few years of life (Fischer & Olson, 2014). However, no matter how great breastfeeding is, challenges are introduced once the mothers start to experience it for themselves, making them to perceive it as difficult. The responses of the mothers when asked about their perceptions about breastfeeding were (a) difficult, (b) best for infants, and (c) best for mothers.

It is apparent that difficult is ranked highest because all six participants mentioned the challenge that comes with breastfeeding. Despite this negative perception, four mothers perceived it to be the finest option for infant feeding. Many of the mothers, initiated breastfeeding with the knowledge that breastfeeding is the healthiest choice for their newborn. However, the experiences they had convinced them that it is undeniably hard to breastfeed. Two of the participants (33%) also mentioned that breastfeeding is excellent for both the babies and the mothers. The benefits of breastfeeding for mothers were also emphasized when asked about their perceptions of breastfeeding, such as weight loss and reduced risks for ovarian and breast cancer.

Findings showed that women of high

socioeconomic status find breastfeeding to be difficult. Many mothers related their difficulty to their experiences such as painful instances and juggling work and breastfeeding. Difficulty with breastfeeding includes poor latch, engorged breasts or mastitis, and sore nipples (Brown, Dodds, Legge, Bryanton, & Semenic, 2014). These difficulties were similar to the experiences that the participants went through. This perception of breastfeeding is based on personal experience.

Although they found it demanding, the participants are aware of the advantages of breastfeeding both for infants and mothers. Heck et al. (2006) highlights that parents who are more achieved in education are more disposed to search for health information about the facets of infant feeding which eventually allows them to understand more about the health benefits of breastfeeding.

The themes that emerged under the research question, what are the perceptions of mother's about breastfeeding is:

Difficult. All of the participants expressed that breastfeeding is indeed challenging. Even in Brown et al. (2014), difficulty with breastfeeding and balancing work and breastfeeding were two of the main reasons for breastfeeding cessation. According to Diji, Bam, Asante, Lomotey, Yeboah, and Owusu (2017), mothers who are exclusively breastfeeding face various challenges both at the individual and societal levels. They have expressed their thoughts about how hard breastfeeding is, especially when their infants start teething. *Participant 2* stated that she considered to "stop breastfeeding" after she got bitten. Alongside the physical pains were emotional stresses that come with breastfeeding. *Participant 3* mentioned that "comments from other people may affect your decision to continue breastfeeding". Balancing work and breastfeeding also adds to the weight of breastfeeding. All six mothers are working professional jobs and had to compromise their breastfeeding practices in order to handle both their responsibilities as a mother and as an employee. *Participant 1* had to "defy the normal patterns for breastfeeding women" because she had to pump earlier than what is prescribed. Highly educated women were found to less likely give medical reasons for discontinuing breastfeeding their child (Brown et al., 2014). Although five out

of six of the participants were able to breastfeed their child successfully for more than six months, their struggles were the same as those who were unsuccessful. The one participant who is currently not breastfeeding her child gave both reasons for ceasing breastfeeding but emphasized more on the strictness of her work schedule.

Participant #1

"It was challenging, but I had the right help."

Participant #2

"I found out it was really not that easy."

Participant #3

"...when I started breastfeeding—that's only when I learned that breastfeeding is hard."

Participant #4

“...it was difficult.”

Participant #5

“...it was too difficult and then I stuck with my plan-six months.”

Participant #6

"It's hard. It's difficult because you'll have to stay up. You'll have to wake up every time."

Best for infants and mothers. Four of the mothers perceived breastfeeding to be best for infants. The following are the statements of the mothers who perceived that breast feeding is best for infants:

Participant #1

“Breastfeeding is actually something that would promote wellness of young infants...”

Participant #3

“My first perception was it’s healthy for the baby.”

Participant #5

“Breastmilk is superior compared with formula milk...”

Participant #6

"I know breastfeeding is best for babies."

Two of them also included the mothers as a beneficiary of breastfeeding, with the following statements:

Participant #1

“Breastfeeding is actually something that would promote wellness of young infants as well as their mothers.”

Participant #6

“After breastfeeding I have realized that breastfeeding is not only best for babies, it’s actually for mothers, too.”

Dietrich, Felice, O'Sullivan, and Rasmussen (2013), suggests that there are evidences that supports breastfeeding is best not only for babies but for mothers as well. It helps improve the woman's health after pregnancy as it may aid in returning to their normal metabolic profile and lose the weight they gained during pregnancy. All six participants initiated breastfeeding, but only five for them were able to successfully continue breastfeeding for more than six months. The knowledge about the benefits of breastfeeding can be related to both advantages for the mother and the baby. Highly educated parents also have a greater probability of promoting their health externally by acting on them, allowing these women to practice what they preach (Mikkonen, 2010). Three of the participants have backgrounds in the nursing field and are continually exposed to mothers who are pregnant or have just given birth. Participant 2 reflected that "every time [she] taught mothers about breastfeeding" in her workplace, she would feel guilty because she was not applying it so she ensured that her next child would be breastfed. The difficulties that came with breastfeeding became more bearable for the mothers because of its known benefits for both the mothers and the infants.

Breastfeeding Experience of Mothers

The breastfeeding experiences of mothers were highly individualized and personal; they vary from person to person. The initiation and duration of breastfeeding also differs depending on various factors such as the mother's intention to breastfeed, home and peer environment, and work environment (Hector, King, Webb, & Heywood,

2014). This study revealed that the participants intended to breastfeed prior to pregnancy, had to balance work and breastfeeding, and were given support by family, peer groups, and workplaces. The five subthemes found were that the mothers (a) to breastfeed (b) balanced work and breastfeeding, were (c) supported by family, (d) supported by peer group, and (e) supported by workplace.

To Breastfeed. All six of the participants intended to breastfeed prior to giving birth or during pregnancy. They all decided this with their spouses. They also expressed that they have to balance their responsibilities as a worker and as a mother. All of the participants have to fulfill the demands of both their work and breastfeeding. Meanwhile, five of the mothers are supported by both their families and their peer groups. However, only four receive support from their workplaces, both by the management and their co-workers. The findings of the study revealed that all the mothers have the intention to breastfeed during the antepartum stage. This is supported by the conceptual framework of Hector et al. (2014) as an individual level factor that translates to the initiation and duration of breastfeeding. At the same time, all the mothers also held a position in the working field while delivering their duties as a mother through breastfeeding; this falls under the group level factors of the conceptual framework of Hector et al. (2014). Support from family and peers through breastfeeding support groups are included in the group level factors of the conceptual framework under the sublevel home and peer environment and are reflected in the responses of five of the mothers interviewed (Hector et al., 2014). Four mothers experienced support from the workplace is also characterized with the group level factors, but under a sublevel called work environment which discusses the integration of work and breastfeeding alongside the mother's capability to store, pump, and feed in the workplace (Hector et al., 2014).

The following statements showed the participants intention to breastfeed their newborns after delivery.

Participant #1

"... I failed twice before. I didn't want to fail any more knowing that this was my last child." "I think I was still pregnant when I set myself up that I will breastfeed, then I was able to get the help that I

needed."

Participant #2

"After I failed breastfeeding with my twins, I started to learn more about breastfeeding and then after that, I decided to breastfeed my... next baby." "I really planned to breastfeed."

Participant #3

"I planned to breastfeed while I was pregnant."

Participant #4

"I have already determined that I will breastfeed and then my idea is that I will breastfeed at least for six months and then will just go from there."

Participant #5

"Breastfeeding must be intentional and everything else will follow." "From the very beginning you really have to intend."

Early breastfeeding initiation, which is within 24 hours after birth, is strongly indicated by the mother's intention to breastfeed (Lawton, Ashley, Dawson, Waiblinger, & Conner, 2012). Another study supports that intent has the utmost importance when it comes to predicting the mother's breastfeeding habits (Fischer & Olson, 2014). This is revealed in this study by five of the mothers who were able to start breastfeeding during the first 24 hours postpartum. Out of the six only one mother, Participant 5, had trouble with early initiation because her son "was not roomed in with [her]". Five mothers were able to breastfeed their child for more than six months of the infant's age. The six mothers had full-time jobs during pregnancy, but four of them were able to exclusively breastfeed from 24 hours after giving birth until their child reached six months of age. This finding was not supported by the study in the United States where mothers who were working full-time while pregnant have lower rates of achieving their goal to breastfeed exclusively as compared to those who do not work while pregnant (Attanasio, Kozhimannil, & McGovern, 2013). In addition, two of the participants—1 and 2—expressed their goal to breastfeed their next child after unsuccessfully breastfeeding their older children.

The themes that emerged under the research

question, what are the experiences of mother's about breastfeeding is:

Balanced work and breastfeeding. When asked about their breastfeeding experiences, all of the women who were interviewed have to work and breastfeed simultaneously. Three of the participants have a Master's degree—two in the nursing field and one in communication arts. The other three participants are doctors of different fields, but all pointing towards healthcare.

Participant #1

"Mine was challenging because I had to defy the normal patterns for breastfeeding women. . . I had to [pump] earlier because I had to fly to Indonesia, just a few weeks short of me giving birth. . ."

Participant #2

"Most of breastfeeding moms are just home. So [I asked myself] 'Will I be successful even though I'm working?' ". "I really saw from [peer counselor] that she was working, studying for her doctorate degree, and breastfeeding full-time. I said, 'It's possible'. So, I did what she did. Electric pump is a need. It's very helpful because you just have to place it and if you're tired you just have to push buttons."

Participant #3

"Even when we had duty. . . I would even pump milk in [a fast food restaurant] ... I really persevered through it. I was happy when I could bring home 8 ounces." "Sometimes I even end up neglecting work because my priority was to go home just to breastfeed [her] because there's no milk that I can bring home to her. We survived on breastmilk donations."

Participant #4

"In the workplace, I pumped because I worked 8:30-7:30 Mondays, Tuesdays, and Thursdays. It's hard to bring the baby because I was supervising students. In the clinic, I couldn't either because I had patients. I could only breastfeed when I come home." "When I returned to work, I started bottle feeding with my breast milk. She got used to the bottle and did not want to breastfeed anymore, but I still pumped my milk. Since she did not feed

directly, my milk supply decreased, so I had to give her formula instead." When asked what prevented her from continuing breastfeeding, she replied, "Work. When I started working, I was actually still pumping, but when she got used to drinking milk from the bottle, she didn't want mine anymore. Even if it was still breastmilk".

Participant #5

"... when I went back to work, first, I tried to bring him here, but there is no- really a place for a baby to—there's no place for him to stay, to sleep. So, I tried every time after class, I feed him but he feeds usually 30 minutes so he gets frustrated. . . It's like I'm timing him and forcing him to feed, but it's not his time so it didn't work." "[My place of employment] is not a breastfeeding-friendly place." "I believe there is a law that every institution must have a breastfeeding area." "Even if you don't bring your baby it's good to have a place where you can store milk or pump and have privacy. The bathroom is not a good place so I never tried to. . . but, in the office, I tried but, it's just too difficult. I did that for a month." "In the end I always had a fever because I decide not just to pump because it's a hassle—we don't have a place."

Participant #6

"It was difficult when I started working." ". . . we have laws for breastfeeding mothers that they are excused for this and that and you have to inform your employer." –

According to the Best Start Resource Center of Ontario (2015), women who work, who have a higher income and educational attainment, have better attitudes toward breastfeeding. At the same time, as supported by a study in Australia, women of higher socioeconomic status who have well-paying jobs and higher positions are more likely to go back to work earlier than their lower socioeconomic standing counterparts (Cooklin, Rowe, & Fisher, 2012). The same can be said in this study where all six women who were interviewed have to go back to work shortly after giving birth. Participant 1 mentioned that she has to "suffer from oversupply" because she has to pump early in order to "store enough milk for baby" before flying abroad

for work.

According to Skafida (2012), maternal employment may be a huge obstacle to breastfeeding. Participant 4 who is the only one of the r participants who was not able to reach six months of breastfeeding said that when she returned to work, her “milk supply decreased” so she has to switch to formula feeding. However, the women that were interviewed in the study proved otherwise because a majority of them—five out of six—were able to breastfeed up to more than six months of age and four out of six breastfed exclusively for at least six months. Out of the six participants, Participant 5 is the only who expressed her frustrations and the effects of being employed in a “not breastfeeding-friendly place”. Although the Republic Act No. 10028 in the Philippines clearly states that breastfeeding support must be shown by workplaces through the provision of safe and healthful working environments, giving special consideration for maternal functions. Participant 5 did not feel support from her workplace (Department of Labor and Employment, 2010).

Supported by family. The presence of an encouraging and reassuring support network is critical for successful breastfeeding: if fathers and family members are supportive of breastfeeding, the mother is more likely to initiate breastfeeding and to breastfeed for longer (Sanghvi et al., 2013). Whether it was emotional support, such as saying words of encouragement, or practical, such as ensuring that the mother gets sufficient nutrition and care, all the participants stated that the support they received was a necessity for the successful initiation and maintenance of their breastfeeding experience. Three of the participants found breastfeeding support groups particularly helpful for practical information, and found that peer counselling very helpful, especially when family support was lacking. As reflected in previous studies by Abass-Dick, Stern, Nelson, Watson, and Dennis (2014) and Mithani, Premani, Kurji, and Rashid (2015), partners and husbands were repeatedly reported as being the greatest support for the mother and all the women spoke of the importance of the practical and emotional support the baby’s father provided.

Participant #1

“I had support that I needed from not only my family and my community, but also from my place of work.” –

Participant #2

“Support from family, especially from [my] husband who would say ‘You can do it!’ . . . I’m very fortunate to have such a caring husband.”

Participant #3

“[My husband] was abroad during that time... he said, ‘Keep breastfeeding because that’s healthy.’”
“My sister was very supportive of me and would say, ‘Keep going, ate, just breastfeed.’”

Participant #6

“Yes, [I received support] especially from family.”
“My mom was super supportive - everything I ate had malunggay in it and helped with producing milk.” –
“Yes, I think yes. And it’s good because I get the support that I needed that’s why somehow now, in my little way, I also give support to others.”

Supported by peer group. Five of the mothers were able to seek support from breastfeeding peer groups or peer counselors. All five of these mothers were the ones who were able to breastfeed their child for more than six months.

Participant #1

“... I started to . . . ask for help...” *“I also did my research and that’s when I landed the help that allowed me to learn more and through that. . . I also became a peer counselor. A certified peer counselor.”*

Participant #2

“To breastfeed successfully I think you really need support. . . and good role models. I really saw from [the certified peer counselor] that she was working, studying for her doctorate degree, and breastfeeding full-time. “. . . I said, ‘It’s possible’.”

Participant #3

“[The certified peer counselor] was there along the journey. We had a support group.” *“We survived on breastmilk donations. Many donated breastmilk for [my baby] because I really wanted*

to keep pushing to breastfeed. Even [the certified peer counselor] would come to the house just to bring milk because she also wanted me to keep breastfeeding."

Participant #5

"Towards the middle when I said I will stop after six months, there's a group that was made. . ." "I think it's not really for breastfeeding before. . . we all wear our babies so because of that she wanted to have the support group." ". . . I think with the help of the support group was more for me to continue breastfeeding." "It's good even if they are not physically [there], it's good to listen to their stories even though they don't encourage you." "To know that. . . it's not only you who experience—that other moms also are going through the same thing or other moms have great experiences. . . it can also encourage you to do the same."

Participant #6

"Breastfeeding Pinay was created. So, I joined groups on Facebook. So, that's where I get information where to buy the cheapest breast pumps. During my first time, there weren't any groups like that. I just became active lately so I gained more information. I also know more breastfeeding mothers now." ". . . it's good to get support that I needed that's why somehow now in my own little way I also give support to others." "I would give support and I would give the correct information that they need so they can continue breastfeeding."

It was found that in middle-income to low-income countries, peer support increases exclusive breastfeeding duration (McFadden et al., 2017; Sudfeld, Fawzi, & Lahariya, 2017). Participant 1, who has influenced two of the other participants, shared that her search for breastfeeding help eventually led to her into becoming a "certified peer counselor". Participant 6 also used her support group Breastfeeding Pinay to "give support" and "give correct information" that other breastfeeding mothers require in order to be successful.

It was found that professional help combined with qualified peer support help yield the highest effectivity in breastfeeding continuation (Kaunonen, Hannula, Tarkka, 2012). Online

breastfeeding forums, such as Facebook groups, were also described as a great source for advice and a conducive platform for sharing experiences with other breastfeeding mothers. The participants who were able to receive the assistance they needed were able to breastfeed successfully and were able to encourage and be encouraged by their support groups. Participant 5 expressed that the knowledge that "other moms are also going through the same thing" and that they are successful encourages her to do the same.

Supported by workplace. Out of the six participants, four of them were able to work and breastfeed seamlessly with the support of their employers and their co-workers. They have the facilities and the acceptance that they needed in order to function as a mother and as an employee in their work environment.

Participant #1

"I got support from not only my family, not only from the community, but also from where I work." "We were supportive of breastfeeding. Many women go back to work not realizing that they're actually. . . protected by law. There's such a thing as breastfeeding law. They can even bring their children to work so that they could breastfeed or they are at least given enough time to pump milk."

Participant #2

"I really saw from [certified peer counselor and co-worker] that she was working, studying for her doctorate degree, and breastfeeding full-time. I said, 'It's possible'. So, I did what she did. Electric pump is a need. It's very helpful because you just have to place it and if you're tired you just have to push buttons."

Participant #3

"[A certified peer counselor and co-worker] was there along the journey. We had a support group. We survived on breastmilk donations. Many donated breastmilk for [my baby] because I really wanted to keep pushing to breastfeed. Even [a certified peer counselor and co-worker] would come to the house just to bring milk because she also wanted me to keep breastfeeding."

Participant #4

"In the workplace, I pumped because I worked 8:30-7:30 Mondays, Tuesdays, and Thursdays."

Breastfeeding employees are also protected by Philippine law through the Expanded Breastfeeding Promotion Act of 2009 to have comfortable facilities to perform their maternal duties in the workplace without being reprimanded, which is the same law that *Participant 1* emphasized on. Women who have higher educational level, have lower work load, have support from both colleagues and administrators to breast pump, have time allocation for pumping at work, and have access to a space specially a lactation room are strong candidates for successful continued breastfeeding up to at least 6 months even after coming back to work (Tsai, 2013). The same is true for the women in this study; the three participants who were able to have the freedom to the said factors are more successful than the other participants. *Participant 4*, who has workplace support but has higher workload was only able to breastfeed for 5 months.

Returning to work after childbirth is associated with shorter breastfeeding duration as women often face barriers in the workplace such as lack of flexibility for milk expression in the work schedule, lack of accommodation to pump or store breast milk, and concerns about support from employers and colleagues (U.S. Department of Health and Human Services, 2016). Out of the six participants, only four reported that they felt supported in the workplace upon their return. According to Mills (2014), the essential elements of a successful workplace program are space, time, and support. Employers can use many different strategies to ensure time for breastfeeding or milk expression, including flexible work schedules and locations, break times for pumping, and job sharing. *Participant 3* reported her supervisor's and colleagues' tolerance to her bringing her child to work as long as she gets the job done. It is important to note, however, that though none of the four participants specified which of the aforementioned elements are present in their workplaces, none of them stated that there are appropriated spaces for breastfeeding (such as nursing rooms) in their workplaces either.

Needs of Mother's in Order to Breastfeed Successfully

Breastfeeding needs that are met or received by the mother may lead to successful breastfeeding practices. According to a study by McFadden et al. (2017), the breastfeeding support given to a population must be tailored to their needs. This study found that women of high socioeconomic status crave for more practical and theoretical education about breastfeeding, emphasize the need for perseverance and commitment to breastfeeding, and necessitate the support of the family in order to breastfeed successfully.

The subthemes developed were the greatest needs of mothers, both breastfeeding and non-breastfeeding, in order to breastfeed their infants successfully. The subthemes that emerged are the following: (a) education, (b) determination, and (c) support from family.

It reveals that education about breastfeeding and determination to breastfeed are at the top of the list when the participants were asked about their requirements for better breastfeeding outcomes. All six of the women interviewed viewed education to be vital in their breastfeeding journey. Along with education, the participants also mentioned commitment and dedication as a prerequisite for successful breastfeeding results. Finally, another must which was declared by the participants is the support from family members. It is apparent that the women interviewed have the same opinions about the needs for successful breastfeeding regardless of the differences in their breastfeeding perceptions and experiences.

All six women yearn for more knowledge about breastfeeding because they felt like there were too many misconceptions as well as discrepancies with reality and what is prescribed. Research illustrates that breastfeeding education amplifies the exclusive breastfeeding rates (Haroon, Das, Salam, Imdad, & Bhutta, 2013). Furthermore, they also stressed about the importance of dedication because despite the challenges that come with breastfeeding, this trait allows the mother to keep pushing. Perseverance to conduct breastfeeding and problem-solving skills is one of the needs for breastfeeding success, according to Wu, Chun-Li, Wu, and Chiang (2015). Five of these women also shared about the support of

support...and good role models. I really saw from [a certified peer counselor and co-worker] that she was working, studying for her doctorate degree, and breastfeeding full-time... I said, 'It's possible'".

“Attend [breastfeeding seminars], read beforehand. During pregnancy, if you really want to breastfeed, you should start reading... because there are many myths about breastfeeding.”

“...good latching and our position...” “These were taught in [the hospital] so it was better for me.”

"Before I even have a baby, my misconception should have been corrected." "...pregnant, expecting moms need to be educated about the needs." – Participant #5

“Number two, the right information. That is necessary.” —

Participant 1 stated that “the help isn’t cheap” even though she gets the help that she needed. Money allows the mothers to hire peer counselors and lactation specialists to help them with the areas they need help on, leading to better breastfeeding education. Some participants also said that health professionals should be educated as well because they are influential, especially right after the birth of their child. Physician knowledge is positively related to breastfeeding initiation and duration (Holmes, McLeod, Thesing, Kramer, & Howard, 2012). *Participant 1* stated that “many people in the medical field are misinformed about breastfeeding” and advocates that “the preparation of formula should not be taught anymore”.

"...I realized how valuable proper education... would be for one to be successful." "...all those things would be affected by how much you understand what you are doing." "No one says, 'Mommy, you're learning, your baby is learning, too.'"

“To breastfeed successfully I think you really need

Determination. According to Ajzen's Theory of Planned Behaviour (2013), positive behavioral beliefs or knowledge of the consequences of certain behavior produce a favorable attitude toward the behavior. The more favorable the attitude, the stronger the person's intention to perform the behavior will be. In this study, four women claimed knowledge that breastfeeding is best for babies and cited it as one of the primary reasons why they intended to breastfeed their children. The researchers found that intention to breastfeed is strongly and directly predictive of successful breastfeeding initiation and maintenance. This supports the research done by Wu et al. (2015) that determination to practice breastfeeding skills and problem-solving is necessary to continue breastfeeding. Women who claimed that they determined to breastfeed also indicated that it was the key to pursue and maintain breastfeeding through frustrating challenges.

"...if [you re] really, really committed to what you're doing. . . [if you have] grit. Then, you would be able to do it." "I think primarily knowledge and commitment."

Participant #2

"Number one: commitment."

Participant #3

"Dedication is needed."

Participant #4

"Patience! You have to be patient when breastfeeding because it can be frustrating, tiring, and painful."

Participant #5

"I had the determination, I had the desire." "It's just easy to persevere rather than to trouble shoot."

Participant #6

"The root is determination. From the very beginning, you really have to have the intention." "If it's intentional, the information will easily come in and even if you're having a hard time... you will really be determined." –

Support from family. Five participants were able to voice out that support is a necessity to breastfeed effectively. *Participants 2 and 3* mentioned that their husbands' words of encouragement like 'You can do it' enabled them to feel the support they needed to keep breastfeeding going. Just like the finding by Ratnasari, Paramashanti, Hadi, Yugistyowati, and Astiti (2017), these women need support from their families and their husbands in order to fulfill exclusive breastfeeding goals. Family-based interventions showed better breastfeeding initiation, continuation, and exclusivity which supports the participants' responses about the necessity of family support in their journey to successful breastfeeding (WHO, 2016). *Participant 6* also mentioned that the support she received allowed her to *"also give support to others"*. When asked if she got the support she needed, the respondent replied,

Participant #1

"Oh yeah. I got the support from not only my family, not only from the community, but also from where I work."

"Support from family, especially from your

husband who would say 'You can do it!'

Participant #3

"[My husband] was abroad during that time... he said, 'Keep breastfeeding because that's healthy.'"
"My sister was still supporting me and would say, 'Keep going Ate, just breastfeed.'"

Participant #4

When asked if she got the support from her family, her community, and her workplace, she replied, "Yes, especially from family."
"My mom was super supportive because all the food I ate had malunggay and all of it helps with milk production."

When asked if she got the support she needed from her family, the community, and her workplace, the respondent replied,

Participant #6

"Yes, I think yes. And it's good because I get the support that I needed that's why somehow now, in my little way, I also give support to others."

Conclusion

All mothers found breastfeeding to be difficult, most mothers perceived it to be best for their infants, while a couple of them thought it best for both babies and mothers. All mothers plan to breastfeed antenatally and have to balance their responsibilities as employees and as mothers by working and by breastfeeding their child at the same time. Most of them received support from their families and other breastfeeding mothers from their breastfeeding support groups. Some experience support from their colleagues and managers as well. All mothers highlighted the importance of breastfeeding education for mothers, families, and health workers. At the same time, they all found that determination is a significant trait to accomplish their desired breastfeeding goals. Most mothers also obliged the unconditional support of family members.

After thorough review of the study's findings, the researchers recommend that future studies should look into the specific knowledge deficiency of mothers, particularly those of high

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Abstract

The Biphaseic Bile Chromogenic method is a novel culture-based test designed to detect fecal indicator bacteria in drinking water. It consists of a selective chromogenic agar incorporated into a biphasic culture bottle. Uriselect, a non-selective chromogenic agar medium designed for the isolation of urine pathogens, was converted into a selective medium for enteric bacteria through the addition of bile salts. The resulting agar formulation was used in combination with Brain Heart Infusion broth for the preparation of biphasic culture bottles where 100 mL water samples are added. To evaluate the performance of the new method, water samples from different sources were tested and the results were compared with those obtained using the standard Multiple Tube Fermentation test. It was demonstrated that a chromogenic agar medium in a selective biphasic culture system provides a reliable tool for the detection of fecal contamination in water. Its ability to detect *Enterococcus* in addition to *Escherichia coli* and other coliforms within a single culture system makes it a simple yet versatile method for detecting fecal contamination. To date, this is the first report of a biphasic culture-based method that detects and differentiates between *Escherichia coli*, *Enterococcus*, and other coliforms in drinking water samples.

Keywords: *biphasic, chromogenic, drinking water, fecal contamination*

Even with major advances in biotechnology and diligent public health measures, water-associated infections remain a major cause of disease and death. Previous global estimates state that about 5.7% of disease burden and 4.0% of deaths can be attributed to issues related to water quality. In addition, water-borne diseases account for as much as 70.9% of all disease outbreaks (Yang et al., 2012). Continued population growth, migration, human development, climate change, and emergence of new pathogens exert pressures on water quality that increase the risk of water-borne disease (WHO, 2011).

An important factor contributing to the occurrence of water-borne diseases is the increasing frequency of natural disasters. Water-related weather events such as excessive rainfall and floods increase the risk of sewage overflow which could contaminate waterways and water distribution systems. Although less developed countries are expected to be most vulnerable and less likely to recover from these events, recent responses to extreme weather events suggest a higher vulnerability of developed countries than what was previously believed (Cann, Thomas, Salmon, Wyn-Jones, & Kay, 2012; Kouadio, Aljunid,

Kamigaki, Hammad, & Oshitani, 2012). In these situations, ensuring the availability of clean and safe drinking water is dependent on the reliability and availability of water testing systems at the place and time they are most needed. In the remote regions of developing countries where resources are limited and during calamities where even the most advanced infrastructure may have been damaged, the need for simple and reliable testing methods is paramount.

One of the parameters used to assess water potability is microbiological quality. Ideally, a test system should be able to detect the presence of any water-borne pathogen when they are present in any given water sample. However, the wide range of possible pathogens, the complexity and limited sensitivity of detection, the associated costs, and the limitations in technology and resources makes this impractical. Thus, the detection of selected indicator organisms in place of pathogen detection has been favored over the years. Because most water-borne infections come from fecal or sewage contamination, the most widely accepted methods are geared towards the detection of fecal indicators (DOH, 2007; WHO 2011).

Although no single species fulfills all the criteria for a fecal indicator organism, the coliform group of bacteria has been long considered to fulfill most of the criteria (DOH, 2007). Many coliforms, however, are also able to multiply in both water and soil. This means that their presence does not always correspond to actual fecal contamination. As a result, its use as an indicator of fecal contamination is limited (WHO, 2011).

Recent studies have identified *Escherichia coli* and intestinal enterococci as better indicators of fecal contamination (Farnleitner et al., 2010; Gruber Ercumen, & Colford, 2014). Apart from being consistently present in waters with fecal contamination, *E. coli* was shown to be associated with the risk of acquiring diarrheal infections (Gruber et al., 2014). *Enterococcus spp.* on the other hand, though isolated less frequently in feces than *E. coli*, may be found in the feces of both domestic and wild animals unlike other indicator bacteria. It is also hardier than *E. coli* when subjected to the usual water treatment strategies making it an excellent adjunct as an indicator organism to represent hardier pathogens such as protozoan cysts (Farnleitner et al., 2010; WHO, 2011). *E. coli* and *Enterococcus*, therefore, can be considered as the two best indicator organisms for testing the quality of drinking water.

Microbial testing of water can be divided into two main categories: molecular and culture-based methods. The use of molecular methods such as Polymerase Chain Reaction and Deoxyribonucleic Acid (DNA) hybridization allows the detection of specific microbial DNA from organisms that otherwise may be undetectable using culture-based methods such as those that are injured or those from dormant microbial populations. While arguably more sensitive than culture-based methods, they cannot distinguish between live and dead organisms. This limits the significance of test results since the mere presence of indicator organism DNA does not necessarily imply the presence of potentially infectious bacteria or of fecal contamination (Brinkman et al., 2012; Lleo et al., 2005). In contrast, culture based methods only detect viable organisms making the results easier to interpret. Culture based methods are also generally more cost-effective.

The most common culture-based tests for fecal detection in drinking water are the Multiple Tube Fermentation (MTF), Membrane Filtration, and Presence/Absence tests (DOH, 2007). Less common methods are direct enumeration techniques involving the use of liquid enrichment media followed by confirmatory testing by isolation on solid media (OECD and WHO, 2003). In the Philippines, the MTF test is still the most frequently employed method for microbial testing of drinking water (DOH, 2007). Elsewhere, due to the development of newer and simpler test platforms, the MTF test has received less favor as a method of choice (Kramer & Liu, 2002).

To help meet the goal of providing safe potable drinking water for Filipinos, the government through the Philippine National Standards for Drinking Water (2007) has set standards defining the acceptable limits of fecal indicator bacteria in drinking water (DOH, 2007). These standards are consistent with those set by the World Health Organization Guidelines for Drinking-water Quality (2011). Whether detecting total coliforms or fecal coliforms, the standard requires that less than 1.1 Most Probable Number of indicator bacteria is detectable per 100 mL of water when tested using Multiple Tube Fermentation method and similar semi-quantitative tests. A limit of less than 1 Colony Forming Unit per 100 mL is set when testing using the Membrane Filtration technique. For qualitative tests, if any fecal indicator organism is detected in a 100 mL sample of water, the water source must be considered contaminated and not suitable for consumption (DOH, 2007; WHO, 2011).

Although water quality standards have been set, none of the available testing methods are capable of simultaneously detecting and presumptively identifying *E. coli* and *Enterococcus* while being simple enough to be performed in resource limited settings. There is, therefore, a need for a method that can be performed with minimal equipment, does not require highly trained technologists, and has the ability to detect two of the best recognized fecal indicator organisms.

One of the ways to detect and differentiate between bacterial groups is through the use of agar media with chromogenic indicators. These indicators produce visible color reactions when specific enzymes are present in the bacterial isolates (Perry, Morris, James, Oliver, & Gould, 2006). One such medium is the Uriselect agar that was designed for the detection of urinary tract pathogens. The

color reactions become visible on Uriselect agar when either one of two bacterial enzymes are present. When only the β -D-galactosidase enzyme is present, a pink color reaction appears. If only β -D-glucosidase is present, a blue color reaction appears. If a bacterial species or strain possesses both β -D-galactosidase and β -D-glucosidase, the combination of reactions produces a bluish purple color (Bio-Rad, 2013). Because the chromogens are insoluble to water, the color reactions are confined to the bacterial colony and do not spread to the surrounding area of the agar medium. This allows the laboratory technologist to distinguish between different isolates.

Most coliforms will produce a bluish purple color reaction on Uriselect agar because they are able to produce both enzymes. *E. coli*, on the other hand only have the β -D-galactosidase enzyme and so produces pink colonies. *Enterococcus* lacks the β -D-galactosidase enzyme but has β -D-glucosidase making it produce blue colonies. Organisms that possess neither enzyme produce no color reactions on the medium (Bio-Rad, 2013; James, Chilvers, Perry, Armstrong, & Gould, 2000; Mahon, Lehman, & Manuselis, 2014; Perry, Morris, James, Oliver & Gould, 2007).

Because Uriselect was designed to detect urinary pathogens, the medium allows the growth of a wide range of bacteria including non-enteric organisms. In contrast, an ideal culture system for fecal bacteria should inhibit the growth of non-enteric bacteria. This may be accomplished by adding bile salts to the culture medium (Mahon et al., 2014). Bile is considered a natural antimicrobial produced by the body. It protects against pathogens and helps regulate the intestinal normal flora. Bacteria that do not have sufficient protective and repair mechanisms are unable to grow in the presence of bile and thus unable to adapt to the intestinal environment. Only bile tolerant bacteria are able to colonize the intestines (Begley, Gahan, & Hill, 2004; Merritt & Donaldson, 2009). Therefore, a non-selective chromogenic medium like Uriselect may be modified for the detection of fecal indicator bacteria through the addition of bile salts.

While there are other methods of detecting fecal indicator bacteria that use chromogenic indicators, none of the tests detect *Enterococcus* simultaneously with *E. coli*. Moreover, no study has been published reporting on a biphasic

method for water testing. The Biphasic Bile Chromogenic method, henceforth referred to as the Biphasic method, is the first chromogenic biphasic culture system for the detection of fecal contamination in drinking water. This paper reports the results of a proof-of-concept study where the performance of this novel system was compared to the standard Multiple Tube Fermentation test.

Methodology

Reagents and Glassware

Bile salt powder (product number RM25A) was sourced from Mast Diagnostics Inc., Brain Heart Infusion (BHI) broth from HiMedia Laboratories, and Uriselect-4 dehydrated agar from Bio-Rad. The BHI broth was prepared according to the manufacturer's instructions. Except for the addition of bile salts, the manufacturer's recommended formulation be used in the preparation of Uriselect agar. For the culture bottles, 160 mL Corning narrow mouth milk dilution bottles were used.

Preparation of Modified Uriselect and Biphasic Culture Bottles

Modified Uriselect agar for the biphasic bottles was prepared by adding 20 grams of bile salt for every 1 liter standard preparation of Uriselect agar prior to sterilization. After autoclave sterilization, biphasic culture bottles were prepared by dispensing 20 mL of the sterilized liquid modified Uriselect agar into each sterile milk dilution bottle. The bottles were left on its side until the agar has set. Immediately before use, 20 mL of BHI broth was added to each bottle.

Collection of Water Samples

A total of 10 water samples were collected over a period of three weeks. These were collected from water taps around the Adventist University of the Philippines (AUP) campus and the neighboring community of Puting Kahoy, Silang, Cavite. Three samples were collected in the first week, three more in the following week, and four samples in the last week of collection and processing. Within one hour of collection, each batch of samples were brought to the laboratory of the AUP Medical Laboratory Science Department and processed immediately.



Figure 1. Plate 1 Biphasic Uninucleated Bottle



Figure 2. Plate 1 Biphasic Inoculated Bottle

Laboratory Testing for Fecal Contamination

Aliquots of the water samples for the MTF tests were transported within 3 hours of collection to the Department of Science and Technology Regional Standards & Testing Laboratory in Los Baños, Laguna. Two sets of MTF tests were performed for each sample: one for total Coliforms and another for Fecal Coliforms.

The remaining portion of the water samples were tested in triplicates for the Biphasic method. Each biphasic bottle was filled with 100 mL of the sample and placed inside the incubator with the agar side at the bottom. The bottles were incubated for the next 4 hours at 35oC. At the end of the 4-hour incubation for preliminary enrichment, the biphasic culture bottles were emptied of the water sample by careful decantation and then further incubated at 35oC. Results were read after 24 hours of incubation. Bottles that demonstrate pink, blue, or purple colonies on the agar surface were considered

test positives. Bottles with no sign of pink, blue, or purple colonies after the first 24 hours of incubation were further incubated to a total of 48 hours. Culture bottles that still failed to produce pink, blue, or purple colonies after 48 hours of incubation were reported as negative.

Results and Discussion

Six out of the ten water samples tested positive for fecal indicator bacteria using the Biphasic method. Five of these produced definitive results within 24 hours of incubation. None of the results were inconsistent between replicates. The results also showed that *E. coli* was detected in 4 out of the 6 samples that tested positive (Table 1). In two of the samples that tested negative for *E. coli*, *Enterococcus* alone (Water Sample 1) or a combination of *Enterococcus* and other coliforms (Water Sample 9) were detected.

Table 1
Comparison of Indicator Bacteria Detected by the Biphasic and MTF Methods

Water Sample	Biphasic Methods			MTF	
	<i>Enterococcus</i> (blue colonies)	<i>E. coli</i> (pink colonies)	Coliforms (purple colonies)	Total Coliforms	Fecal Coliform
1	+	-	-	-	-
2	-	-	-	-	-
3	-	+	+	+	+
4	-	+	+	+	+
5	+	+	+	+	+
6	+	+	+	+	+
7	-	-	-	-	-
8	-	-	-	-	-
9	+	-	+	+	+
10	-	-	-	-	-

Legend: (+) presence of growth, (-) absence of growth

Unlike the Biphasic method, the MTF test does not identify the specific genera or species of indicator bacteria present in the water sample. It is also incapable of detecting *Enterococcus*. The MTF test simply determines whether coliforms or the more specific fecal coliform group are present (DOH, 2007; WHO 2011).

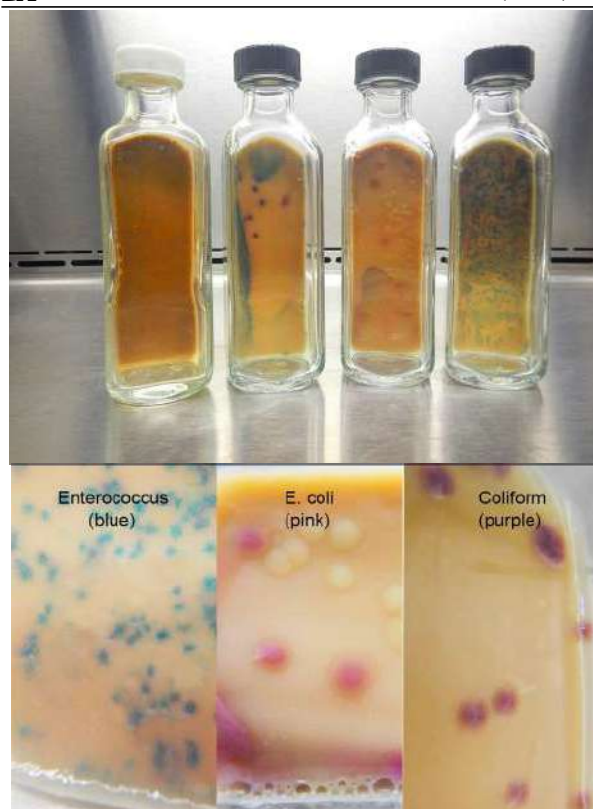


Figure 3. Growth and color reactions on biphasic bottles.

When the results are compared between methods, no discrepancies are seen in the samples that tested positive for coliforms. However, when the detection of fecal contamination is compared without regard for specific indicator bacteria, a small discrepancy can be seen. The first water sample was only positive for fecal contamination according to the Biphasic method. The rest of the samples showed comparable results using the Biphasic and the MTF method (Table 2).

Table 2

Biphasic and MTF Qualitative Test Results for the Detection of Fecal Contamination

Water Sample	Biphasic	MTF
1	+	-
2	-	-
3	+	+
4	+	+
5	+	+
6	+	+
7	-	-
8	-	-
9	+	+
10	-	-

Legend: (+) fecal contamination detected, (-) fecal contamination not detected

The difference in results can be explained by the inability of the MTF method to detect *Enterococcus* unlike the Biphasic method as previously discussed. It can be argued then that because the Biphasic method was able to detect *Enterococcus* in a sample that was negative for *E. coli* and other *coliforms*, it is in this respect able to offer an advantage over the MTF test. With more information available, end users of the Biphasic method can decide which of the indicator organisms are relevant to their respective testing protocols and criteria for interpretation. For example, the mere presence of fecal coliforms even in the absence of *E. coli* or *Enterococcus* may be considered by some to be enough evidence of fecal contamination. On the other hand, others would only consider *E. coli* as a specific indicator of fecal contamination. Those who consider *Enterococcus* as a valid indicator will also find the method applicable for their use (Farnleitner et al., 2010; Gruber et al., 2014; WHO, 2011).

Because the Biphasic method can detect and differentiate between *Enterococcus*, *E. coli*, and other *coliforms*, it can potentially detect fecal contamination in samples where the usual indicators for the MTF test are either absent or in very low numbers. The capacity to test an entire 100 mL water sample, the ability to detect an additional indicator organism, and the enrichment provided by a biphasic environment (Cui et al., 2012) makes the Biphasic method potentially more sensitive for detecting fecal contamination.

Conclusion & Recommendation

The Biphasic Bile Chromogenic method detects the presence of fecal contamination in water samples using three groups of indicator organisms: *E. coli*, *Enterococcus*, and *coliforms*. Its ability to detect *Enterococcus spp.* makes it potentially superior over the Multiple Tube Fermentation test. Because the procedure is simple and easy to interpret, it is a viable option for analyzing and monitoring the quality of drinking water systems in resource- and skills-limited settings.

While the tested method is still under development, this proof-of-concept study has shown that a biphasic culture system with a selective chromogenic agar medium can detect fecal contamination in drinking water samples. Additional strategies for improved selectivity may be explored. For example, testing should be performed to evaluate whether incubation at 44.5°C instead of 35°C will increase the test's specificity in favor of fecal organisms. It was also observed that the addition of bile salts caused a darkening of the Uriselect medium which reduced the saturation of color reactions. An alternative formulation where the bile salts are mixed with the BHI broth instead of the chromogenic agar may be the subject of future testing to determine if color reactions will improve without detrimental effects on selectivity. Development of a purpose-built culture bottle, testing formulations using different chromogenic media, as well as more extensive evaluations to determine the sensitivity and specificity of the test must be done before the method can be recommended for routine use.

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Abstract

Nursing students are trained to promote healthy practices among clients but it does not necessarily mean that they are applying it to themselves. As healthcare providers, nursing students offer support to clients in the promotion of healthy lifestyle. However, there is limited literature exploring the types of social support that nursing students have and its relationship to personal health practices. The purpose of this study was to determine personal health practices among nursing students and its relationship to social support (emotional support, information support & instrument support). This cross-sectional study was conducted among 163 nursing students from two universities in Cavite and Pasay City, Philippines and selected using purposive sampling. They answered self-report questionnaires including the perceived social support scale and personal health practices. Data were analyzed using Spearman Rank correlation coefficient. The results revealed a high level of social support with a mean of 3.78 (SD = 0.62) and moderate personal health practices with a mean of 3.15 (SD = 0.31). Although there was no significant relationship between the general perceived social support and personal health practices, emotional support showed a positive relationship with personal health practices ($p = .004$). Students' score in health practices did not differ significantly considering gender, but significant differences were found when age was considered ($p = .01$) which means that the older the student, the higher is the personal health practices.

Keywords: *Health Promoting Lifestyle, University Students, Interpersonal*

Unhealthy practices are the top contributory factors to the increasing death due to non-communicable diseases (NCD) both globally and locally (WHO, 2017). Considering that NCDs are highly preventable disease, it remains to be the top cause of death among Filipinos. It does not only affect the adults but also the young people (WHO, 2017). In fact, the Department of Health (DOH) reported that 40% of deaths among young (10-24 years old) Filipinos are brought about by NCDs. It is said that unhealthy practices established during young age may continue to exist until adulthood increasing the risk of acquiring chronic diseases (Essa & El-Shemy, 2015). With the increasing number of young people engaging in unhealthy practices, seeking determinants for health promoting behavior is of paramount importance.

Promoting healthy practices is one of the important roles of a nurse (Geok, Yusof, Lam, Japar, Leong, & Fauzee, 2015). Although the higher educational institutions teach and train student

nurses how to promote healthy lifestyle to clients, it seems that efforts on how to safeguard their own health is not being emphasized (Siappo, Nunez, & Cabral, 2016). Karadag and Yildirim (2010) claimed that an advocate of healthy lifestyle who does not give importance to their own health cannot expect others to practice the same.

Knowledge on health promoting lifestyle plays a positive role in adopting healthy habits among nursing students (Blandon, Molina, Martin, & Campos, 2017). Although nursing students are expose to health concept, they might not necessary apply it on themselves (Bryer, Cherkis, & Raman, 2013). Academic overload and other socio-demographic factors could either positively or negatively influence health practices. Students tend relieve their pressures and stress from academic workload though adopting unhealthy practices (Blandon et. al, 2017).

Practices that promote health play a big factor in the maintenance and improvement of one's health

(Mirghafouvard et. al, 2014). Studies have identified factors that significantly influence the personal health practices among nursing students and these are socio-demographic (Al-Khawaldeh, 2014; Essa & El-Shemy, 2015; Nassar & Shaheen, 2014; Wang, Ou, Chen, & Duan, 2009; Wang, Xing, & Wu, 2013) and Self-efficacy (Binay & Yigit, 2016; Peker & Bermek, 2011; Mirghafouvard et. al, 2014). Although social support has been a concept of interest in predicting healthy practices (Hurdle, 2001), there are limited studies using Pender's theoretical framework. Most recent research are directed towards women (Adams, Bowden, Humphrey, & McAdams, 2000; Harvey & Alexander, 2012). Considering that social support has significant impact to lifestyle of nursing students, investigating the relationship between social support and personal practices will be able to give important insights in designing programs in helping nursing students.

The purpose of the study is to investigate the relationship of social support to personal health practices among nursing students and be able to determine whether demographic data such as age and gender influence the respondent's health practices.

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Social Support.

One of the seminal researches of social support was conducted by Cobb (1976) defining social support as a perception of an individual that someone within his social network loves and cares for him (Cohen & Willis, 1985). It appears that, "Buffer" and "protective" are repeatedly mentioned in the literature as the nature of social support which influences an individual's psychological and physical health. Social support serves as a buffer to overcome daily challenges. A lack of social support indirectly leads to illness state and disease through posing a negative psychological condition resulting from anxiety or depression (Cohen & Willis, 1985). These findings is confirmed by Kaplan, Patterson, Kerner, Grant and HIV Neurobehavioral Research Center (1997) that a person with fewer social support significantly increase the risk of acquiring diseases much more even death. Furthermore, social support is protective in nature from birth to death, it appears that it protects individual to life's crisis

from "low birth weight to death, from arthritis through tuberculosis to depression, alcoholism, and social breakdown syndrome (Cobb, 1976, p.300)". Literature from this seminal studies have claimed that social support is protective in nature through buffering the negative effects of stress to health, thus helping an individual in the maintenance of health and preventing diseases. This concept is supported by Pender (2011) in her Health Promotion Model (HPM) which states that social support being provided by family, friends, peers and health provider could either positively or negatively influence an individual to engage in health promoting behavior to main and improve health. Recent studies has confirmed the relationship of social support to health promoting behaviors (Adams et al., 2000; Harvey & Alexander, 2012) but they have only focused to women. There are studies about the role of social support in every events of a person's life. However, there is little information about the effects of social support on the transition to college.

This is an area in which the literature must thoroughly investigate (Cobb, 1976). College life is considered crucial to students because it is the period of transition from puberty to adulthood where several adjustments takes place such as living arrangements, training and education (Zacky, 2017). Nursing students are part of the university population and they also suffer stressful events as they balance academic workload and personal issues (Aydin, Kahraman, & Hicdurmaz, 2017). In most recent studies among nursing students, social support helps them to overcome stress and has a positive effect to general health (Aydin et al., 2017; Yildirim, Karaca, Cangur, Acikgoz, & Akkus, 2017).

Types of social support were identified by Schaefer, Coyne and Lazarus (1981) under the consideration that types are relatable to nursing students. There are five types of social support but three types where emphasized namely emotional, informational and instrumental.

Emotional Support

Emotional support which meets the individual's affective or emotional need (Kendall Hunt Publishing, 2011). It also refers to the students' perceptions of trust, warmth, respect, and love as well as communications of empathy and care from their teachers such as, "I feel bad for you" or "I know how

you feel” (Federici & Skaalvik, 2013). According to Melecki and Demaray (2003) that emotional support is the highest reported type of support that students have and is often provided by parents and even teachers. In a local study conducted, it is said that throughout adolescence, reliance on parents decreases, but this does not necessarily mean that the attachment relationship diminishes. Around this time, attachment may extend from parents to peers, with peers often becoming the preferred persons to spend time with and receive comfort from (Maximo & Carranza, 2016). It seems that the literature suggests that supportive relationships with family and friends can act as protective factors against stress and assist in the regulation of negative emotions.

Informational Support

Informational support is defined as messages that include knowledge or facts, such as advice or feedback on actions or, it is a communication that provides useful or needed information. According to Melecki and Demaray (2003) informational support is the highest reported type of support among college students and that usually being provided by teachers (Melecki & Demaray, 2003). In a recent study, informational support is used in patients with Total Knee Amputation (TKA). The participants in this research noted the importance of TKA in terms of surgery and recovery. However, participants also expressed concern about inadequate information regarding pain management. (Goldsmith et al., 2017). It seems that there is still a dearth in literature about informational support, thus investigation of this concept should be encouraged since it is reported as the most common type of support that college students have.

Instrumental Support

Instrumental Support is a type of support that provides direct aid such as money, time, or assistance (Zavatkay, 2015). Research has shown that Emotional and Instrumental Support go hand in hand. The relationship between emotional support and instrumental support connects to a broader discussion about the nature of prosociality which is a large body of work demonstrates that empathy drives support provision suggesting that emotional support and instrumental support should track each other. Results of Morelli’s research proved

that both emotional and instrumental support maximizes an individual’s well-being (Morelli, Lee, Arnn, & Zaki, 2015). Recent research conducted in Singapore have shown that emotional support provides encouragement, comfort, affinity, and acceptance to distressed migrants, especially when it is offered by individuals regarded with a degree of closeness and affection. This is essential at a time when migrants’ existing relationships have been destabilized by relocation (Chib et al., 2013). In a study conducted to migrant in Singapore, it shows that tangible assistance, in the form of instrumental support, involves the economic and physical aid that migrants receive when adjusting to life in their host country. The tangible support in includes direct assistive measures, such as the sharing of resources to facilitate job-seeking activities and navigate housing-related issues in an unfamiliar environment (Chib, et al., 2013).

Personal Health Practices

There is a drastic change in the health of the young people for both developed and developing countries due to sedentary lifestyle and unhealthy diet (Anjali, 2017). This condition resulted to the rise of Non-communicable diseases (NCD) among adolescence. In the Philippines 40% of the deaths among young Filipinos (10-24 years old) are attributed to NCD’s (DOH). With the alarming statistics, health professionals put a great push in seeking determinants of personal health practices (Pengpid, Peltzer, & Mirrakhimov, 2014) because the present and future health status of university students are strongly related to their health practices (Al-Khawaldeh, 2014). College students had a high proportion in adopting health risk behavior like poor dietary habit, physical inactivity, sexual risk behavior, and tobacco use (Pengpid, Peltzer, & Mirrakhimov, 2014). Several high risk practices were identified on university students in India that is overweight, poor dental practices, poor dietary habits and sleeping pattern (Peltzer, Pengpid, & Mohan, 2014). Furthermore, several studies who have described the health practices of college or university students but yields different results. There are studies that described the health promoting behavior as low (Al-Khawaldeh, 2014; Golmakani, Naghibi, Moharari, & Habibollah, 2013), but findings of another study showed that the health

promoting behavior is interpreted as moderate (Wang et al, 2013). On the other hand, one study use comparative approach which findings show students who live away from home have difficulty in adopting to healthy behavior compared to those living at their home (Lupi et al., 2015). Apparently variability with research findings exists across different settings. An example is the studies specifically for nursing students showing that the respondents have fair (Essa & Elshemy, 2015), however moderate levels of health promoting lifestyle was reported by Nasaar and Shaheen (2014) . It appears, that there is some consistencies with the findings of the study when describing the health promoting behavior of the students, thus further investigation should be conducted to clarify the inconsistencies. This might be attributed to variability of theoretical framework that anchors each related study.

Theoretical Framework

The health promotion model notes that each person has unique personal characteristics and experiences that affect subsequent actions. The set of variables for behavioral specific knowledge and affect have important motivational significance. The model identifies seven factors: personal factors, perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity related affect interpersonal influences as well as situational influences (Pender, 2011).

Regarding health practices, the model of health promotion is a nursing model which helps to predict the health behavior of an individual. The revised model is based on social learning theory which was modified to identify the factors associated with exercise behavior where exercise is a health-promoting behavior that is influenced by personal and behavior specific cognitions and affect (Heydari, 2014).

Methodology

This study utilized a cross-sectional descriptive correlational study. The population of this study included 163 nursing students: 21 first-year students, 56 second-year students, 59 third-year students, and 27 fourth-year students enrolled in two higher education institution located in Cavite and

Pasay City during the academic year 2017-2018.

Instrumentation

The respondents were given an instrument comprising of three parts. The first part is the demographic profile of the respondents such as age and gender. The second part was to describe the respondent's social support and the third part is a tool to describe the personal practices of the respondents. The first part of the instrument used was adapted from the RAND Corporation's "Medical Outcomes Study (MOS)-Social Support Survey Instrument". It was developed by Sherbourne and Stewart under RAND Corporation (RAND). There are items which were modified and regrouped on the basis of relatability to the target population and the literature the researchers have gathered. The "Modified Social Support Survey Instrument" has three dimensions namely Informational, Instrumental and Emotional comprising of 7-items per dimension, making it a 21-item scale. Five-Point Likert scale (Always, Often, Sometimes, Rarely and Never) was used as measure for each item. The instrument had undergone content validation from four nurse educators holding a master's degree in nursing. Some items were reworded and removed under instrumental and emotional support to increase the reliability of the instrument thus obtaining an alpha of 0.743 for Informational Support, 0.697 for Instrumental Support and 0.561 for Emotional Support.

Another part of the instrument was the Personal Health Practices Scale. The instrument is a 25-item self-constructed questionnaire about the personal health practices with subscale in Eating habits; Activity & Exercise and Sleeping habits. These variables also utilize the Five-Point Likert scale (Always, Often, Sometimes, Rarely and Never). The scale underwent content validity from four nurse educators with master's degree in nursing.

Data Gathering Procedure

After the approval of the proposal, the researchers set a letter of request to the Academic Dean, Research Coordinator, and College Dean of the two higher education institution. After getting the permission, the researchers administered

the questionnaire to the respondents. Before the respondents answered the questionnaire, the researchers explained the mechanics and encouraged each to approach the researchers in case the respondents have trouble in understanding any item in the questionnaire. The confidentiality of the identity of the respondents was ensured by instructing the respondents not to write their names. All questionnaires returned was all kept and sealed in an envelope. After the data were encoded, the survey questionnaires were shredded. The gathering of data was conducted from April to July 2017 and December 2017. The researchers were able to retrieve 166 questionnaires but three were invalid due to incomplete data.

Analysis of the Data

This study used the Statistical Package for Social Sciences (SPSS) version 22.0. The descriptive statistics, mean and standard deviation, were used to determine the social support and personal health practices of the respondents. To determine if there is a significant relationship between the independent and dependent variables, Spearman Rank correlation coefficient was used. The Analysis of Variance (ANOVA) and t-test was used to determine the difference in the personal health practices of the respondents regarding their lifestyles such as diet, activity and exercise and sleeping pattern considering gender and age.

Results and Discussion

Respondent's Level of Social Support

Table 1 show that the level of social support of the respondents in general is "high" with a grand mean of 3.78 and a standard deviation of 0.61.

Table 1.

Social Support of the Respondents

Dimensions	Standard Deviation	Mean	Interpretation
Informational	.78	3.82	High
Instrumental	.77	3.74	High
Emotional	.59	3.65	High
TOTAL	.62373	3.78	High

4.5-5=Very High, 3.5-4.49=High, 2.5-3.49=Moderate, 1.5-2.49=Low, 1-1.49=Very Low

According to the results, the mean of all subscales of social support is 3.78 which is considered as high. This result is consistent with the study done by Aydin and Hicdurmaz (2017) on nursing students but somewhat different results from Mansour and Diwani (2008) with a moderate social support with their respondents. It means that nursing students have adequate source of support coming from family, friends, and teachers. High social support is beneficial to the students in terms of their health according to Pender (2011) social support social support being provided by family, friends, peers and health provider could either positively or negatively influence an individual to engage in health promoting behavior to main and improve health.

According to Melecki and Demaray (2003) that informational support is the highest reported type of support that students have which is consistent with the result of the study. The informational support has the highest mean scoring to 3.82. Informational support is coming from teachers (Melecki & Demaray, 2003). It implies supportive approach to students specially those who are away from their parents is important in promoting a holistic approach in learning and not merely focusing in academic aspect but in psychological and health aspect as well.

Respondent's Level of Personal Health Practices

Table 2 summarizes the level of Personal Health Practices of the respondents. In general the respondents' health practice is "moderate" with a grand mean of 3.15 and a standard deviation of

Table 2.
Personal Health Practices.

Dimensions	Standard Deviation	Mean	Interpretation
Eating Pattern	.41137	3.2411	Moderate
Exercise Pattern	.60366	3.0716	Moderate
Sleeping Pattern	.42924	3.0434	Moderate
TOTAL	.31253	3.1494	Moderate

Legend:
4.5-5=Very High, 3.5-4.49=High, 2.5-3.49=Moderate, 1.5-2.49=Low, 1-1.49=Very Low

The personal health practices of the respondents is interpreted as “moderate” which is consistent with the study by Wang et al. (2013). However, there are studies that described the health practices of college or university students as low (Al-Khawaldeh, 2014; Golmakani, Naghibi, Moharari, & Habibollah, 2013). Poor performance of healthy habits may be attributed to academic overload that in order to complete academic task, students tend to skip meals and sleep less (Mirghafouvard et al., 2014). With moderate levels of personal health practices, it implies that students still make an effort to take care of their health. Although the university teach and train student nurses how to promote health to clients, promoting healthy lifestyle among students should also be emphasized.

Social Support and Personal Health Practices

Table 3 shows that the relationship between Social Support and Personal Health Practices, in general, is not significant as indicated by *p*-value of .251.

Table 3.
Relationship between Social Support and Personal Health Practices

Variable	r	p-value	Interpretation
Social Support	.090	.251	Not Significant
Informational	-.016	.835	Not Significant
Instrumental	.075	.340	Not Significant
Emotional	.198	.004	Significant

Legend:
Significant at 0.01 level (2-tailed); Significant at 0.05 level (2-tailed)

The findings of the study imply that social support may not be statistically related to personal health in which other studies have the opposite result showing a positive strong relationship between social support and personal health practices (Adams, Bowden, Humphrey, & McAdams, 2000; Harvey & Alexander, 2012). Although social support in general is not statistically significant to personal health practices, emotional support shows significant positive relationship with a *p* value of 0.011. Emotional support is considered the highest reported type of support that students have during transition in school which parents provide (Melecki and Demaray, 2013). Furthermore, while parental support remains the best predictor for adolescents’ emotional well-being friends become relied upon more frequently for support during adolescence with the additional support of a class supervisor or teacher (Schalwijk, Blessinga, Willemsen, Vanderwerf & Schungel, 2015). This concept is supported by Pender (2011) in her health promotion model it states that persons most likely to engage healthy practices when significant others model them, thus assistance and support from a person’s social network enable a person to practice healthy lifestyle. It will be beneficial to students if they receive more emotional support from family, friends and teachers for it influence them positively to engage more on healthier practices.

Personal Health Practices, Age, and Gender

Table 4 shows that the Personal Health Practices when considering Age and Gender. Age is found significant with a *p* value of .013.

Table 4.
Personal Health Practices When Age and Gender is Considered

Variable	F	p-value	Interpretation
Age	3.720	.013	Significant
Gender	2.125	.147	Not Significant

Legend:
Significant at 0.01 level (2-tailed); Significant at 0.05 level (2-tailed)

The finding shows that there is a significant difference in personal practices when age is considered. This finding is also true to other studies

(Al-Khawaldeh, 2014; Essa & El-Shemy, 2015; Nassar & Shaheen, 2014; Wang et al., 2009; Wang et al., 2013). It implies that considering age, the personal health practices of the respondents differ significantly. A study conducted by Deeks, Lombard, Michelmores and Teede (2009), individual who are less than 30 years old are not likely interested in information regarding illness prevention. It appears that as a person age they are more likely to engage in healthier lifestyle. However, present and future health status of university students are strongly related to their health practices (Al-Khawaldeh, 2014). Thus, encouraging the young people to practice a healthy lifestyle early decreases their chance of acquiring NCD's in the future.

Conclusion and Recommendation

This study investigated the relationship of social support to personal health practices among nursing students and determined whether demographic data such as age and gender influence the respondent's health practices. The results revealed that nursing students have an overall high level of social support while a moderate level of personal health practices. Although there is no significant relationship between the social support and personal health practices in general, the subscale emotional support is found significantly related personal health practices. Between age and gender, it was found out that considering age the personal health practices of the respondents differ.

The results of the study gives evidence-based insights on how social support can influence nursing students in applying what they are promoting to themselves. One of the most significant results from this study is that although emotional support has the lowest score among the three subscale of social support; it was found out that when the latter is reinforced it will significantly increase the engagement of the respondents in doing personal health practices which could help them in the maintenance an improvement of their health in general. Thus this study could be used in planning a health-promoting intervention not only to nursing students but to college or university students in general.

The study has focused in describing social support and its relationship to personal health on

nursing students only. The study utilizes a cross section design which has the potential to negatively affect the ability to infer the causal relationship between significant correlates to personal health practice scale. Hence, a longitudinal study design is recommended to be used for future research. Lastly, the findings of the study might not be applicable to other settings. Thus, for future research, it is recommended to replicate it to other countries and with larger sample size.

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Abstract

Dengue has been endemic in several countries worldwide. It is reported that millions are infected with the disease yearly, causing thousands of deaths. The Dengvaxia issue occurred when Sanofi Pasteur announced that the vaccine, which has been administered to grade-schoolers in the Philippines, can only be effective for those who have been previously infected with dengue. It has also been reported that the immunization program of the Philippines has been experiencing a decrease in the immunization rate. This study aimed to look into the influence of the Dengvaxia issue on mothers' perceptions on child vaccination. This study employed a qualitative phenomenological research design. To recruit for participants, a purposive sampling method and snowball sampling methods were utilized to select 11 participants. A validated semi-structured questionnaire was used for the interview. Participants included mothers of children ages 0-24 months who have knowledge of the Dengvaxia issue. The data gathered were then analyzed using Collaizi's method. The findings of the study revealed that on the dengvaxia issue, the themes were fear, empathy, and anger. On the mother's perception towards vaccination, the themes were protection and giving up authority. Also, in terms of the influence of Dengvaxia issue on child vaccination, identified themes were vaccine confidence and vaccine hesitancy. Furthermore, the study also revealed that nine out of the 11 mothers are still in favor of their children being vaccinated. It was therefore recommended that nurses must do continuous health education about the positive effects of immunizations on the child's health and in the community as a whole.

Keywords: *dengue, Dengvaxia issue, child vaccination*

Dengue fever is a mosquito-borne disease that is rampant in tropical areas (WHO, n.d.). It is spread by a mosquito, specifically the species of *Aedes aegypti* and *Aedes albopictus* (Center for Disease Control and Prevention, n.d.). The symptoms of the disease include high fever, vomiting, headache, muscle and joint pains, as well as skin rash. The recovery time of the disease usually takes around two to seven days (WHO, n.d.). A person with dengue who is not treated may soon develop a life-threatening dengue hemorrhagic fever which results to bleeding, blood plasma leakage, decreasing levels of blood platelets, or even dengue shock syndrome (Kularatne, Weerakoon, Munasinghe, Ralapanawa & Pathirage, 2015). The incidence rate of dengue was 2.2 million cases in 2010 and increased to 3.2 million cases in 2015 and every year there were 20,000 deaths worldwide (WHO, n.d.). In the Philippines, the incident rate of dengue between the years 2010 and 2014 shows that there were 750,311

cases and 3,388 deaths (DOH, n.d.; Undurraga, Edillo, Erasmo, Alera, Yoon, Largo & Shepherd, 2017).

Sanofi Pasteur developed the vaccine for dengue called CYD-TDV, popularly known as Dengvaxia in December 2015 (Aguilar, Stollenwerk, & Halstead, 2016). Dengue vaccine was used to avert the dengue fever in humans. It helps an individual's body produce an immune response that will be antagonistic to the four dengue viruses (WHO, n.d.). The body's immune system causes the antibodies to be capable of fighting dengue infections (Rohaidi, 2016). The Philippine Government through the Department of Health (DOH) approved Dengvaxia to be administered in the Philippines along with other countries, such as Mexico and Brazil during the year 2015 (Philippines Daily Inquirer, 2017). The following year, 11 other countries availed the Dengvaxia vaccine which includes Mexico, Indonesia, Philippines, Costa

Rica, Brazil, Paraguay, El Salvador, Guatemala, Thailand, Peru, and Singapore (Vidalon & Nair, 2016). By October 2017, Dengvaxia was approved to be administered in 19 countries (WHO, n.d.).

The Dengvaxia issue started when Sanofi Pasteur, it's manufacturer, announced the results of a new clinical data analysis in which they found that Dengvaxia could likely cause more risk for the people who are not previously infected by the virus. This announcement was made sometime in November 2017. Sanofi Pasteur, through their representatives, announced that those who have not been previously infected with dengue virus could possibly have more severe cases of diseases that could occur on the following vaccinations and that they are not recommended to be vaccinated. At that time about 733,713 children were vaccinated in some parts of Luzon, of which 8-10% or 70,000 children have not had dengue yet (Bacungan, Gudzman, & Harmonio, 2018). In December 2017, the DOH has announced the temporary suspension of the Dengvaxia vaccination until it was totally suspended by the Food and Drug Administration (FDA). In January of 2017, the Public Attorney's Office (PAO) conducted an autopsy on five children who died due to the administration of the vaccine, but the findings of the autopsy were inconclusive; signs and symptoms and even death occurred within six months after completing the Dengvaxia vaccination. By this time, around 40 cases are being monitored whereas another nine deaths are reported.

By the end of January 2018, there were reports that parents somewhere in Zamboanga City, Philippines refuse the DOH's deworming program due to the Dengvaxia scare. On February 4, 2018, the DOH delivered an alarm that its related health department and programs have suffered from the outcome of their failed dengue immunization program. Pazzibugan & Aurelio (2018) reported that parents of children who are candidates for vaccination are afraid for their children's safety and kept them away from other instructed vaccines. Health Undersecretary Rolando Enrique Domingo showed his concern by stating that the problem is that the immunization program of DOH is suffering causing the vaccination rates to suffer, as well. Immunization rates for polio, measles, tetanus, and diphtheria also plummeted (Cepeda, 2018). Though the suffering was out of their expectation,

the immunization coverage rate for Filipino children had gone down to 60 percent from ideal 85 to 90 percent because of the death of the children who were given Dengvaxia vaccine (Pazzibugan & Aurelio, 2018).

Due to this failure, the perception of mothers toward the immunization program of the government may have changed. This can result in a compromised program of immunization. Therefore, it was the purpose of this study to explore the influence of the Dengvaxia issue on the mothers' perception on child vaccination.

Research Objectives

The study intended to discover how the Dengvaxia issue affects the insights of the mothers on child vaccination. Specifically, the study sought to answer the following questions:

- 1) What are the mother's perceptions regarding the Dengvaxia issue?
- 2) What are the mother's perceptions towards the child's vaccination?
- 3) How does the Dengvaxia issue influence the mother's views on child vaccination?

Methodology

The study employed a qualitative phenomenological research design to explore the perception of mothers towards the vaccination of children following the Dengvaxia issue. The intention of the qualitative study is to define and comprehend rather than to foresee and control the phenomena being studied (Jamshed, 2014). Furthermore, Creswell (2014) stated that the goal of the qualitative research is to interpret and document the whole phenomenon from one person's perspective. Waters (2017) also defined a qualitative phenomenological research as a lived experience of a phenomenon which focuses on the participant's experience and behavior.

Population and Sampling

The study was conducted in a Barangay in Silang, Cavite, Philippines. The participants were initially chosen utilizing the purposive sampling technique and then snow ball sampling technique. In purposive sampling method, the participants were selected based on the criteria set by the researchers.

On the other hand, snow-ball sampling was done by allowing a participant to recruit other participants to participate in the study based on the criteria stipulated. In the end, the researchers were able to interview 11 mothers who fit the criteria.

Instrumentation

The researchers utilized the semi-structured guide interview as the instrument for this study. This is done by asking semi-structured open-ended questions to reveal the mothers' insights on the Dengvaxia issue as well as their perception about the child vaccination program of the DOH. An interviewer was assigned to conduct the interview with the participants, which was done in the participants' residences. The questions asked were translated into Tagalog. The interviewer took note of the non-verbal cues during the course of the interview. An audio recorder was also utilized to record the whole proceeding of the interview. The significant others of the participants were also asked about the participant's reaction regarding the Dengvaxia issue. A synthesis of the interview was then relayed back to the participants prior to the interpretation of the data to confirm the initial finding of the researchers.

Analysis of Data

The Colaizzi method was utilized in the analysis of the data in this study. By utilizing this method, the data collected were translated into English by the help of the University's Language Department and reviewed multiple times to extract the significant statements made by the participants' perception regarding the Dengvaxia issue, importance of child vaccination and the influence of Dengvaxia issue on other child vaccinations. Then, meanings from the statements were formulated and the 3 major themes were emerged. Afterwards, related literatures were gathered to support the findings of the study and arranged according to the participants' descriptions of their experiences. Following this, the researchers went back to the barangay and validated the findings by providing them with exhaustive descriptions of the participants.

Ethical Considerations

This study underwent ethics review by the Ethical Review Board (ERB) of the Adventist

University of the Philippines through the University Research Office. After the approval by the ethical board, the researchers then proceeded to conduct the study. Consent was also obtained by the researchers from the participants. The informed consent helped explain the benefits and the risks involved in the conduct of this study. To ensure that the procedure is well-understood, the researchers also verbally explained the procedure. Furthermore, the informed consent helped ascertain that the participants of the study were not forced to participate.

Results and Discussion

A total of 11 mothers participated in this study. The analysis of data was started after all the interviews were done and the audio recordings were transcribed into texts. Rereading the participants' transcriptions several times helped extract the significant statements related to the themes identified under the three issues that were explored. The three major themes identified were as follows: (a) perceptions of mothers regarding the Dengvaxia issue (b) perception towards the child vaccination (c) influence of Dengvaxia issue on child vaccination.

Perceptions of Mothers regarding the Dengvaxia Issue

Fear. The participants revealed their fear towards vaccinations as a lot of children have died from the Dengvaxia vaccine. The fear was worsened every time they hear the news from the media about how badly these children suffer. Forster et al. (2016) stated that fear is an intrinsic factor which is rooted in the psychological characteristics. The study conducted by Hill and Cox (2013) revealed that the news media has a negative impact on the parents as it highlights the fear to make the risk more alarming. Moreover, Ropeik (2013) stated that the emotions such as fear, occur when people do not have control over the specific risks as well as having the desire to have control over these risks. The findings of this study revealed that the mothers developed this fear because they do not have control over the risks identified. They also have the desire to control these risks, however, they could not. Below are some of the statements of the participants indicating their fear regarding the Dengvaxia issue.

(Of course, I'm also afraid, many kids have died.)

Participant #1

"Yung nga po, nakakatakot pong paturukan ang mga bata kasi gawa nga po dun na ang iba po namamatay na dahil dun sa dengvaxia."

(That's it, we're afraid to have our children vaccinated because of some of those who died of the Dengvaxia vaccine)

Participant #6

"Syempre, parang matatakot ka kase diba oo yung anak mo binabakunahan sa center tapos naiisip mo yung balita."

(Of course, you would somewhat be scared, yes your child is being vaccinated at the center then you would think of the news).

Participant #7

"Syempre natakot ka kase, katulad nung nakaraang taon pa yun pala yung nagano jan sa Putting Kahoy. Nung umpisa parang nabasa ko yun na binigyan ng kasulatan na pinapahintulot, kaso hindi ko napirmahan. Nanghinayang din ako nung sa umpisa kasi sabi ko sayang din yun kaya lang para bang itinanggi na hindi ko mapirmahan yun tapos nga nagsilabasan na yung mga issue na ganito ganyan, natakot na ako."

(Of course, you get scared, like what happened last year in Putting Kahoy. At first, I think I read that it was allowed but I did not sign, then I felt bad not being able to avail, then all this news came out, I am afraid.)

Participant #8

"Syempre naman po. Natakot parin tsaka dapat ihintu na yung pag ano kase marami nang naapektohan."

(Of course, I was scared, and they should have stopped giving it because many were already affected.)

Participant #9

"Syempre, natatakot din ako sa mga nangyari sa mga bata."

The statements mentioned above by participants 1, 6, 7, 8 and 9 describes the mothers fear towards the Dengvaxia issue. The fear experienced by these mothers occurred when news of the unexpected deaths due to Dengvaxia came out on media.

Empathy. The participants expressed that they empathized with the people who lost their lives brought about by the Dengvaxia issue of which they cannot help but simply observe for whatever happens. Merriam Webster Dictionary (2018) defined empathy as the awareness and understanding of others' feelings and experiences. Furthermore, Pehrs, Zaki, Taruffi, Kuchinke, and Koelsh (2018) found out in their study that people usually empathize when they have the knowledge about the experiences or situations which cause those emotions. The statements made by the participants in relation to empathy towards the people who suffered due to the Dengvaxia issue are as follows:

Participant #3

"Ewan ko ba ay.. Nakakaano dahil ang iba ay namamatay. Nakakaawa din naman."

(I don't know, oh. It has an effect because others are dying. I feel pity for them)

Participant #4

"Kawawa ang mga mahihirap kasi kung sino ang mahihirap sila pa ang ginagawang example, syempre mahihirap eh sa kanila yung parang testing area tapos pagganyang nagkaproblema wala nang sasalo hindi naman sasalohin ng gobyerno yun wala lang. Ganon lang naman ang kalakaran natin eh."

(Miserably poor. The poor are sacrificed, because of their poverty, they become the testing area and when problems happen, nobody is there to save them, not even the government. That's the common practice here.)

Participant #11

"Syempre nasasaktan, kase may anak din ako eh. Kahit hindi ko iyon anak."

(Of course, I'm hurt because I also have kids, even if those are not my children.)

The statements mentioned by Participants 3, 4 and 11 indicate their empathy towards the many lives that were taken. Furthermore, these mothers feel so much for the parents of the children who died from the administration of Dengvaxia.

Anger. The participants voiced out their anger knowing that Dengvaxia cruelly took the innocent lives when Dengvaxia could have saved these children from the disease. The participants even wondered what could have happened if these children did not get injected by the Dengvaxia then they might have survived. Merriam Webster Dictionary (2018) defined anger as the strong emotion of dissatisfaction. Bonn (2011) also pointed out that anger is triggered by the perceived injustice by individuals. The injustice would later on develop into anger. Anger occurs when people experience threatening situation and traumatic environment (Oolup, 2015). Injustice must have been felt by the participants, thus, they developed anger towards those people who were responsible for this program. Below are the accounts of the participants:

Participant #4

"...pero kunwari yang dengvaxia nay an sabi nila libre-libre tapos yun pala pagganyang may kumplikasyon wala na, namatay na yung mga bata wala na. di mon a mababawi yun. Kaya bihira na kaming nagpapaano na jan depende nalang kung importante kagaya sa mga ganyang maliit (bata), yung talagang subok na ba."

(...but they bluff about dengvaxia saying it's free, free but then when complications happen when the child dies, no more, you can no longer recover that.)

Participant #8

"Kung sino man po ang naka imbento niyan, dapat po sinigurado muna na effective yan na gamut talaga pang dengue, hindi pang patay ng mga bata."

(Whoever invented the medicine should have made sure that it is an effective medicine, really for dengue, and not to kill children.)

Participant #11

"Hindi ko pa naman siya gaanong kilala pero ang msasabi ko lang po ay wag nang ituloy, tama na iyong pag inject nila. Pag aralan nilang mabuti ang pag inject nila sa tao. Lalo na yung denvaxia na iyan, hindi naman pala sigurado kung ang bata ay may ano. Dapat kung may sakit yung bata, dapat wag na nila iturok. Kase baka mamaya, matuluyan, andami nan gang namamatay."

(I don't really know the vaccine that much but what I can say is that it should be stopped. The injection is enough. They should have studied the vaccine first. When the child is sick they should not give the shots, the children may die, many have already died.)

Participants 4, 8 and 11 showed their anger because many people have died because they feel that the people who are directly in-charge did not study the vaccine very well before they let the vaccine be injected to the people and now the ill-effects already took many innocent lives.

Perception Towards the Vaccination

Security/Protection. Most of the participants pointed out that vaccines are to prevent their children from illnesses and even if their children get sick, the disease will only have minimal effect since their children are vaccinated. The purpose of the vaccination is to introduce the weaken antigen(vaccine) that does not cause the disease but have the ability to promote the immune system to produce antibodies thereby preventing the children by developing the immunity without having the actual disease when they are exposed to the vaccine-preventable diseases (Center for Disease Control and Prevention, n.d.). Additionally, World Health Organization (2018) approved that immunization by administering vaccines is the most effective investment for health while Health Protection Agency (2010) also credited the immunization as the best tool for eradicating and controlling the infectious disease. The statements made by the participants regarding the vaccination are below:

Participant #2

"Para po maiwasan yung ibang sakit."

(To avoid other illness.)

Participant #3

“Para siguro panlaban sa sakit”

“May be to fight against diseases”

Participant #4

“Ah kasi diba mga vaccine naman ginagamit para magkaroon ng anti-body mga katawan natin halimbawa katulad sa mga bata, kagaya sa mga measles, sa bulutong at sa kung ano mang.. para malabanan nila kasi more on ano naman yan eh, kagaya sa mga maliliit (bata) para malabanan ng mga katawan nila yung mga mikrobyo.”

(Ah because those vaccines are used for the body to acquire anti-bodies, for example in children like measles, for chicken pox, and others, to fight against because they are more on...like for the little children for their bodies to fight against germs/microbes.)

Participant #5

“Para sana sa kabutihan ng mga bata kasi baka may mangyari sa mga anak ko natatakot na ako.”

(It's for the safety of my children because they may be in danger and that's what scares me.)

Participant #6

“Parang kahit papano ano, yung anak mo safety na ganon nga, pag nagka sakit halimba, mild lang siya hindi talaga siya talagang ano kase kahit papano meron siyang mga turok na ganon.”

(It just that at least, my child is safe because of that, like for example, if my child got sick and it's just mild it won't matter that much because he/she had gotten vaccines.)

Participant #7

“Kasi para sa akin mga ano yan eh, para simula baby para din proteksyon sa kanila.”

(For me, while they are still a baby it's for their protection.)

Participant #8

“Para sa pangangatawan ng anak ko. Para hindi siya sakitin.”

(For my child's body so he/she does not easily get sick.)

Participant #10

“Dahil ang anak ko gusto kong malligtas sa sakit. Kapag sila'y madapuan, katulad ng karamihan. Dengue diba, sa pagtatae.”

(I have my children vaccinated because I want them to be safe from illnesses such as dengue.)

Participant #11

“Sa akin ay protection sa bata”

(For me, it's protection for kids.)

Stated in the accounts above, Participants 2, 3, 4, 5, 6, 7, 8, 10, and 11 claimed that vaccines keep the children from the illness and protect them from the danger brought about by the diseases when they were asked about what vaccines are for and how do vaccines help the children.

Giving up the authority. Some of the mothers do not have the idea why vaccines are injected for their children resulting in giving the control of their children's health over to the health care providers. Others get their children vaccinated because they heard vaccines are good for the babies. Fadda, Depping, and Schulz (2015) stated that parents who think they are not capable of making a good decision for their children results in giving up their role to other people such as the health care professionals or the health institutions to be their children's health care agent. Furthermore, Hill and Cox (2013) also found out that most of the parents recognize the need to seek guidance from the practice nurses to make the right decision for their children's health care. Below are some of the statements given by the participants:

Participant #1

“Para sa mga bata po.”

(For the children)

Participant #9

*"Hindi ko alam eh."
(I don't know...)*

In the above statements, Participant 1 said that she only knew that vaccines are needed for the baby while Participant 9 stated that she does not know the importance of vaccines when they were asked about what vaccines are for and how does it help the children.

Influence of Dengvaxia Issue on Child Vaccination

Vaccine confidence. Most of the mothers are still confident about the effectivity of the other vaccines even after the Dengvaxia issue have happened. They still choose to get their children vaccinated as they already experienced the effect of vaccines for their children. Trust is a vital component of people's attitudes toward vaccination (Ozawa & Stack, 2013). On the other hand, vaccine confidence means that the individual accepts the benefits of a vaccine and is willing to receive the vaccine (Larson, 2013). Vaccine confidence results when an individual receives knowledge of the benefits and the experiences of the benefits of the vaccine in terms of preventing diseases. This can be referred to as vaccine efficacy and vaccine safety (Handy et al., 2017). The statements below are related to the identified theme of vaccine confidence. The statements in relation to the vaccination made by the mothers signify that they are still in favor of child vaccination despite the occurrence of the Dengvaxia issue.

Participant #3

"Oo! Papaturokan parin! Syempre. Sabi nga nila ay mas maiging maturukan."

(Yes, I'll still have him/her vaccinated, of course. They say it's better to have them vaccinated.)

Participant #4

"Oo. Kasi ano naman yun eh. Subok naman na, yung sa mga nuon pa na ano. Yung mga pangbata lang, yung talagang kailangan pero ngayon yung mga bago lalo na yung mga ganyang minamadali pero di naman kayang ipaliwanag eh di ko sila inaanohan."

"Yes, because they are already time-tested. Those for children are really needed, but for the new ones, especially those that were released too soon, that they cannot not explain I don't subscribe to".

Participant #7

"Hindi naman kung yung dati sabi ko sayo simula baby hanggang ngayon sa mga anak ko, hindi naman kaso lang yung mga bago ngayon na darating dun ako naano."

"I have no issue about other vaccines because I know babies need them. It's the only dengvaxia that I'm afraid of Not really, with the old ones, as what I've told you, from babyhood until today, my children, my views have not changed, only for the new ones that are coming."

Participant #8

"Papabakunahan pero hindi yung dengvaxia ... kakalabas lang na gamot, andami nang naapektohan agad."

(Yes, I will have him/her vaccinated but not with dengvaxia... because the medicine has just come out and several have died.)

Participant #10

"Hindi naman, hindi naman ako nadadala sa mga ganon. Katulad sa mga tv tv, dahil kase may tv kami dun nababalitaan...dahil kase yung tinuturok nila talagang gamot, para sa katawan ng mga bata iyan eh. Sa dami ko nang anak, iyan ay kumpleto sa turok pero hindi ako namamatayan ng anak ko. Dahil kase ang mga anak ko nasa tama. Kapag pinapaturukan ko, inaalagaan ko sila, hindi ko sila pinapakain ng hindi dapat kainin."

"I don't easily get swayed by those on TV because we have a TV where we hear the news... Because the vaccine is really medicine for the body of the child. I already have many children. They all have complete vaccinations, but they did not die because they are on the right track."

The above statements made by Participants 3, 4, 7, 8 and 10 revealed that most of the mothers are still in favor of child vaccination because they still trust the effectivity of the other vaccines. They have

full trust in these vaccines since the effect has been felt by their older children.

Vaccine hesitancy. The Dengvaxia issue has a negative impact to some of the mothers as they expressed their doubt and second thoughts about the effectivity of other vaccines. The feeling of doubt among the participants is referred to as vaccine hesitancy or vaccine unwillingness (Larson, 2013). Vaccine hesitancy is thought to be responsible for decreasing the off-the-rate of vaccination and increasing risk of the outbreak of vaccine-preventable diseases (Dube, Laberge, Guay, Bramadat, Roy & Bettinger, 2013). Parents who have little or no experience of the effectivity of the vaccines are less likely to have the confidence in the vaccine (Kennedy, LaVail, Nowak, Basket & Landry, 2011). The following are the statements explained by the participants why they are not in favor of child vaccination after the Dengvaxia issue occurred.

Participant #1

“Nakakatakot na pong paturukan sila baka mapasama lang sila ibang gamot imbis na mapaayos sila”

(It's scary to have our children get injected, they may be at risk, they may get worse instead of better.)

Participant #6

“Medyo, kase yung isang anak kong isa, yung 1 year old, hindi ko na tinapos eh. May dalawang vaccine pa siya, hindi ko na tinapos.”

(Sort of, because for my one-year-old child, I did not complete his/her vaccine. He has two more, I did not continue.)

Based on the statements mentioned above, Participants 1 and 6 stated that as soon as the Dengvaxia issue happened, they become hesitant to have their children vaccinated.

Conclusions and Recommendations

The findings of the study revealed that most of the participants expressed fear towards the Dengvaxia vaccine, some perceived empathy for the victims of the Dengvaxia while the remaining showed their

anger to the manufacturer of the Dengvaxia vaccine. Also, majority of the participants have the idea of why their children need to be vaccinated and how vaccines protect them from fatal illnesses. However, there are still a few participants who are not sure about the purpose of vaccination which then led them to give up their authority to the health care provider to be their children's health care agent. Almost all of the participants are still in favor of child vaccination as they have seen how those vaccines protect their older children from infectious diseases. In contrary, the Dengvaxia issue has caused the rest of the mothers to have vaccine hesitancy and they negatively view the other vaccines and stop vaccinating their children.

The study recommends that nurses and public health officials do continuous health teaching to the community to avoid confusion and to increase their knowledge about the purpose of vaccination, the benefits of vaccination, side effects of vaccines and the risk for not having their children vaccinated. Also, it is recommended that future researchers conduct a study utilizing mixed methods approach to have a wider perspective and understanding of the phenomenon. A wider scope of study is also recommended to obtain a more vivid and thorough picture of the phenomena.

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Abstract

Undernutrition remains a serious public health problem in the Philippines. The death rate of children below five years old remains highest in the poorest sector of families in populated urban settings. Literature has identified factors that influence undernutrition quantitatively in other countries; however, this dilemma has not been identified in the Philippines qualitatively. Anchored on the ecological approach and health belief model, this study explored undernutrition among children below 5 years old in a barangay with high rate undernutrition in Silang, Cavite. This qualitative case study used purposive sampling. Data were gathered through semi-structured interviews of three mothers and three health workers. For triangulation, observation, and document analysis were done. Data were analyzed using thematic analysis. Findings showed that factors influencing undernutrition include children's poor health condition, poor access to affordable healthcare services, large family size, lack of knowledge and education of mothers, negative behavior of mothers and weak financial support from the government. Because of the need for appropriate intervention to curb undernutrition, these findings may merit future sustainable programs to improve children's nutritional status in the barangay with high rate undernutrition. Further studies are needed to evaluate undernutrition reduction programs implemented in the barangays of the Philippines.

Keywords: *undernutrition, Philippines, descriptive case study*

Undernutrition is considered the most common risk factor for illness and death worldwide undernourished children and it has a small chance of survival for children less than five years old (Briend, Khara, & Dolan, 2015). About 45% of mortality among these children is associated with undernutrition mostly from under developed and developing countries (WHO, 2016). In 2015, about 155 million children below five years old were stunted. In the Philippines, undernutrition has been a chronic issue. Children suffering from stunting or chronic undernutrition in early life prevent their bodies and brain from reaching its full potential. This damage has further effects in the learning process and performance in the schools and will eventually negatively their future earnings (UNICEF, 2016).

The Philippine Food and Nutrition Research Institute (FNRI), a government agency mandated to address nutritional status of the Filipino people conducted its nutrition survey in 2015, showed that the Philippines has not reached the target of the Millennium Development Goals (MDG) to reduce child undernutrition to 13.6%. The prevalence

underweight was higher in 2015, which is 21.5% as compared to 2013, which is at 20.0% the ratio is 2:10 children were underweight and 3:10 children were stunted (FNRI, 2015). This is alarming because linear growth is a strong predictor for adult height and the height of 2 years old is the best predictor of human capital. (Stein, 2010). A separate study of Ahmed, Hossain, and Sanin, (2012) and Bailey, West, and Black (2015) have a similar result. Their study showed that micronutrient deficiencies in iron, zinc, iodine, and vitamin A have various effects in children's bodies. Lack of these micronutrients will increase the chances of poor growth, intellectual impairment, morbidity, and mortality. Based on the study of Bailey et al. (2015), iron deficiency tops the world's micronutrient deficiency, and it usually results in anemia which, in turn, lowers work performance and endurance, reduces intellectual function, decreases immune system and hormones (p. 22).

The Philippines has a long way to go before it succeeds in eradicating undernutrition in the country. According to Zamora et al. (2013), several nutrition

related programs have been implemented all the way from community to the national level. Projects including regular nutritional survey, awareness on micronutrients and its implications, laboratory services, food fortification program, advocating on household gardening, and more. Other governmental department has been implementing cash transfer for the least privileged family not only for poverty alleviation but also to reduce undernutrition cases. However, despite the multi-sectorial approach in addressing undernutrition, the challenge remains at the forefront of public health arena and the number of children in the Philippines remains a chronic issue.

Many of the studies about nutritional status have been done in Sub Saharan Africa (SSA) and other Asian countries describing the prevalence of undernutrition among children below 5 years old and analyzing the socioeconomic, demographic, environmental and cultural factors related to undernutrition (Asfaw, Wondaferash, Taha, & Dube, 2015; Demissie, & Worku, 2013; Headey, 2014; Kandala, Madungu, Emina, Nzita, & Cappuccio, 2011). However, there are limited studies done in the Philippines and most of it is quantitative studies (Cuesta, 2007; Yoon, Black, Moulton, & Becker, 1997; Rohner, Bradley, Grant, Elizabeth, Lebanon, Rayco-Solon, & Sanieel, 2013). With the long road to travel before the Philippines could possibly eradicate undernutrition, this study would like to extensively explore undernutrition among children below 5 years old. Understanding the causes could help program managers and decision makers in high rate undernutrition Barangay in Silang to outline an effective nutrition program that shall reduce the negative impacts of undernutrition.

Grounded by the theories of ecological approaches and health belief model, this qualitative research may be able to contribute in finding solution related to undernutrition issues by determining the causes affecting it. This study would like to specifically know the causes of high rate undernutrition in the selected barangay. How do families cope up with the problem of undernutrition? What are the ongoing nutrition programs being implemented by the local government to help curb down undernutrition? What is the best program to be implemented to reduce prevalence and incidences of undernutrition?

Methodology

Research Design

Case study was opted to help understand the behavioral conditions of the participants as it explored the ongoing real life experience followed by thorough analysis of associations between events and situations (Zainal, 2007). This design increases in-depth understanding of the prevalence of undernutrition through interviews and observation in its natural setting. Baxter and Jack (2008) commented that since qualitative case study facilitates in exploring situations with the use of several various sources, multiple issues would be explored and understood.

Research Setting

The selected barangay was chosen because it has 19.7%, prevalence rate of undernutrition and ranked highest among the 64 barangays in Silang, Cavite. It is situated in one of the poorest areas in Cavite, Philippines behind the rich neighborhood. Of the 1,000 households, around 200 households are occupied by informal migrant settlers from different provinces living in makeshift houses, using shared toilets with limited water supply, dirty water flowed in open drainage and most of the small children are running around naked and with barefooted.

Sampling

Purposive sampling was used for an in-depth collection of information from the research participants (Ritchie, Lewis, Nicholls, and Ormston, 2013). The participants were selected based on the referral provided by the Barangay Health Workers (BHWs) who have good knowledge of potential samples. The sample population of this study included three mothers of malnourished children and three BHWs for face-to-face interview. The criteria in selecting the mothers include at least one underweight child (0-4 years old) in the family and the child must be labeled malnourished for at least 1 year. The selected BHWs must have a direct involvement in the program implementation or nutrition monitoring in the barangay. All participants have signed the informed consent form that provides information to their "rights", (Creswell, 2013), in participating the research.

Data Collection and Instrumentation

A semi-structured face-to-face interview was held to allow more interactive discussions and to get in-depth information (Brinkmann, 2014). Outlined interview questions were prepared to avoid diverting to irrelevant questions. Two different interview questions were prepared; one for parents of malnourished children which focuses on the mothers' personal and household level experience while the second questionnaire was geared towards programmatic discussion. Three University Instructors in Public Health and Nutrition Department validated the interview questionnaires. During the interview, one of the team members led in asking questions and ensured proper audio recording, the other one took notes of key words mentioned by the participants while third member of the team did a silent observation. Ideally, any interviews must be done in a silent environment to avoid disruptions and ensure better quality of audio recordings. However, due to lack of space, the interviews were conducted in moderately crowded venue. Nevertheless, the interview went smoothly despite of some minor disruptions like when a child cries.

After the interviews, a review of available documents in Barangay Health Center was inquired through the help of the Barangay Nutrition Scholar (BNS). The record showed that the selected barangay has 488 children below 5 years old and 96 of them are categorized as malnourished. Audio records of the interview were repeatedly played and listened to. Key words in audio recordings were identified and coded for thematic analysis. In the absence of analysis software, the identified themes were tabulated in excel sheet. Each theme was grouped based on the research questions. After the thematic analysis was completed, information was triangulated with the available archives in health center and notes on observation. After the triangulation, interpretation of information followed and matched it with the research questions.

Results and Discussion

The results presented below are based on the face-to-face interviews and silent observation being conducted. Themes were identified and grouped in relation to the research questions. The results in category were matched to the themes, which were

based on research questions.

Causes of Undernutrition

Poor health condition of children. The three mothers have mentioned that one of the reasons why their children are malnourished is because of their poor health condition. The child of the first mother (Participant 1) being interviewed was born healthy until nine months old when the child started to suffer from asthma. She said:

“umaabot ng tatlong araw ang bawat atake ng asthma ung anak ko at sa tuwing nangyayari un nawawalan siya nang gana kumain” (Every bout of asthma attack will usually last to at least three days and during the period of asthma attack, the child has no appetite)

The second mother (Participant 5) has also stated that:

“Ang dalawang anak ko ay sakitin. Napapanisn ko na yung dalawa sa apat ko na anak ay mabilis ubuhin at sipunin” (Two children are sickly. I noticed that two of my four children could easily get cough and cold).

In the case of the 5th Participant's children's condition, undernutrition poses high chances of her children to catch cough and cold that, in turn, worsen the children's nutritional status. This is not surprising because according to Jackson et al, (2013), undernutrition is one of the risk factors to lower respiratory tract infection.

Poor access to affordable healthcare services. In relation to the first cause mentioned above, the three mothers (participant 4,5,6) have mentioned that:

“Kahit nagkakasakit ang mga anak naming hindi na kami pumupunta sa doctor. Ginagamot nalang naming dito sa bahay kasi pag magpadoktor kami ma sasaid talaga kami.” (Even if our children got sick, we haven't consulted a doctor. Instead, we resorted to basic home remedies as going to a doctor will drain their financial resources). The WHO (2016) said that access to healthcare services is one of the health determinants. Poor access to affordable healthcare services is indirectly affecting the child's nutritional status due to prolonged suffering from a disease.

Poverty. One of the mothers (Participant 5)

was asked about the possible causes of her children's undernutrition, she immediately answered without hesitation the phrase:

“Kulang sa tama at masustansyang pagkain” (Lack of good and nutritious food).

This mother (Participant 5) has four children and is living in a tiny shelter of around 10 square meters in size. Her husband is a construction laborer while she devoted 100% of her time in taking care of their children. The weekly salary of her husband is insufficient to bring good food on their table. The mother said:

“Sa-id lang ang kinikita ng asawa ko” (my husband has meagre income).

All three mothers looked pale and thin and are living in makeshift houses. The third mother (Participant 6) seemed to be sick during the interview. The environment and living conditions show that these mothers are living a hard life. In the analysis of Headey's (2014) study, he mentioned uneducated mothers put their children at risk for developing undernutrition because of poor feeding and care practices. All three mothers are living under the meager income of their husband. This seems to conform to the statements of Bain et al (2013), and Psaki, et al (2012) that food insecurity, especially in the household level, is a significant risk factor for undernutrition. Household food access is an indicator of the child's nutritional status using anthropometric measurements. Undernutrition in children shows that there is a deep connection between food and assets poverty.

Large family size and rising population. All three health staff from the barangay stated that:

“Isa sa mga dahilan kung bakit nagkaka malnutrisyon ang mga bata ay dahil sa laki ng pamilya. Ang pagkakaroon ng malaking pamilya na said lang ang kita ay nagpapahirap sa buhay ng pamilya lalo na sa pera. Pag kakapiranggot ang kita tapos madami kayo sa pamilya One of the reasons that many children are suffering from undernutrition is because of the family size. Having more than three children in a family, with meager income, poses the family to a difficult financial situation. Having limited income but with bigger family size, depletes financial resources and instead of buying good and sufficient amount of food, the limited amount of income will be divided to all family members in

order to meet the needs”.

Aside from a bigger family size, the number of population in the selected barangay is rising due to the continuous increase of migrants. According to the Head of Health and Sanitation Committee (Participant 3):

“Mga 20 percent ng mga nakatira dito ay mga bagong naninirahan galing sa iba't ibang probinsya at halos ang mga anak nila ay mga malnourish”. (Around 20% of the households are new migrants where most of the malnourished children are identified).

When asked why most of the malnourished cases belong to migrant families, she (Participant 3) answered:

“karamihan ng mga nanay ay walang alam sa importansya nang tamang nutrisyon ng knilang mga anak. Ito ay direkta o hindi direkta na may kaugnayan sa lebel ng edukasyon dahil ung mga pandarahuyan dito ay nanggagaling pa sa probinsya”. (Most mothers are unaware on the importance of children's nutrition. It could also be directly or indirectly related to the level of education as the migrant families are coming from different provinces.)

The barangay health staff's statements appear to agree to the statements of Ali Naser, et al (2014) that family size and availability of food in the household create food security among the members, as this is solely dependent on the financial resources. Thus, when a plate of pizza is shared by many, each person can only take a small and insufficient size of the pie.

Lack of knowledge and education of mothers. All three mothers have poor level of education. Participant 1 said:

“Hindi ako nakapagtapos ng hayskul”. (I did not finish high school).

Participant 5 mentioned:

“Dalawang beses lang ako nagpa check up dahil tinatamad ako at gusto ko lamang tumigil sa bahay”. (I only went twice for my prenatal check up because I feel lazy and wanted to stay home).

All the health staff from the barangay mentioned that: *“Yung mga pamilyang ito ay may kaunting kaalaman lamang sa pagpapakain at pagaalaga dahil sila ay darayuhan”.* (These families have little knowledge about feeding and

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care practices because they are migrants).	na magpafeeding program ng tatlong buwan pero	
Uneducated mothers put their children at risk for developing undernutrition because of poor feeding and care practices (Headey, 2014).	natitigil din kasi pagkatapos nang isang buwan wala nang budget.” (The budget is really very insufficient even for feeding program. Sometimes, we plan to run a feeding program for three months but it will eventually stop after one month as there’s no more funding).	
<p>Negative behavior of mothers. After serving the selected barangay for almost 9 years, (Participant 3) said that one of the reasons why undernutrition persists is because some parents are uncooperative and unresponsive to the government’s programs. As an example of being unresponsive, the 3rd Participant said that:</p> <p><i>“Yung ibang mga nanay na sinabihan na dalhin yung kanilang mga anak sa health center para mag deworming ay hindi naman pumupunta. Sa huli kami pa din ang pumupunta sa mga bahay bahay ng di nagpapakita sa health center para magbigay ng deworming pills at kung minsan pa kahit nasa tapat na kami ng bahay nila hindi pa din kami papansinin dahil sa pag susugal”.</i> (Some parents who were informed to bring their children to the health center for deworming will not show up. At the end, the assigned BHW has to come to the unresponsive parents house to provide the deworming pills to the children. In some cases, when we conduct house to house delivery of deworming pills some parents will ignore us and prefer to just gamble.).</p>	<p>Poor Coping strategies of mothers. In order to help alleviate the problem of undernutrition of their children, each parent tried to find doable solutions. Two mothers (Participants 1 & 5) said:</p> <p><i>“nagpapasusu kami nang aming mga sangol, nagbibigay ng vitamins pero hindi rin matuloy tuloy dahil sa kakulangan sa pera at paminsan minsan nagluluto din kami ng iba’t ibang pagkain para magustuhan n gaming mga anak”.</i> (We breastfeed our babies, provide multivitamins supplements but can’t be sustained due to financial constraint and we try to diversify our cooking recipe so our food will be appealing to our children).</p> <p>However, based on observation, these two mothers are also very thin that raises question on the quality and quantity of their breast milk.</p>	
<p>Another health staff (Participant 2) said that:</p> <p><i>“ Yung ibang mga nanay ay mas inuuna ang pag susugal. At dahil nagsusugal sila nawawawalan na sila ng oras para maghanda ng pagkain sa pamilya at binibigyan na lamang nila ng barya yung kanilang mga anak para bumili ng mga biscuit at sitserya para hindi sila ma distorto sa paglalaro”.</i> (Some mothers are prioritizing gambling activities. As a result of their gambling activity, some mothers are unable to prepare good food for the family. In the end, these mothers will give pennies to their children to buy snacks such as biscuits and junk foods so that they will not be disturbed from playing).</p>	<p>Inaccessible nutrition programs. In order to address undernutrition problem, the staff in barangay health centers are implementing several programs. These programs include regular deworming, feeding program that is dependent on budget availability, ongoing health and nutrition education sessions among mothers in district 2, and community sanitation to reduce the risk of getting sick that will directly affect the nutrition status of the children. Recently, the barangay has introduced Alternative Learning System (ALS) program initiated by the government where interested mothers enrolled themselves to increase their level of education. Participant 3 said:</p> <p><i>“Meron kami ngayong 5 nanay na naka enroll sa ALS. Sana lang matuloy tuloy at hindi sila matukso na tumigil”.</i> (Now we have 5 mothers who are enrolled at ALS. We just hope that they will continue their studies and not tempted to quit).</p>	
<p>Weak financial support from the government. One of the challenges of the barangay in fighting undernutrition is the irregular and insufficient budget allocation from the government to ensure continuous implementation of nutrition related programs. Participant 2 said;</p> <p><i>“ Kulang na kulang talaga ang budget para sa feeding program. Kung minsan nagpaplano kami</i></p>	<p>Findings revealed that the cause of undernutrition in children is complex and numerous. To understand the disease fully, cultural, social, psychological and political factors existing in their</p>	

settings must be considered. Undernutrition is more than a disease and its biological causes. Many of the themes generated from the data in this study seemed to be consistent with the result of previous quantitative studies done in other countries of the same topic. The result of the review of articles in undernutrition in SSA of Bain et al (2013) somehow have similar results in this study, which is poverty, illiteracy, ignorance and big family size except that the participants have not mentioned climate change, policy and corruption. This may suggest that different methods of research and different settings are unlikely to have similar outcomes.

Conclusion

This study explored on undernutrition among children under 5 years old in high rate barangay in Silang Cavite. The programs implemented by the government brought positive change in the lives of malnourished children for a short time. However, many children are still malnourished because of different causes identified during the interview and silent observation. The causes of undernutrition affecting children 5 years below in the selected barangay comprises of the poor health condition of the children, lack of access to affordable healthcare services, poverty caused by unstable employment of the parents, big size of the family and rising population, insufficient financial support from the government, uncooperative mothers, limited feeding programs for the children, and the negative behavior of mothers. Since the causes have already been identified for child undernutrition, community leaders and BHWs may understand the sentiments of the families in their barangay concerning undernutrition, thus, they should utilize these findings to plan and implement more sustainable nutrition programs.

One of the limitations in this study was the short span of time. Data collection was supposed to include focus group in the data gathering but because of time constraint it was omitted thus only interview and observation was done for triangulation. Another limitation is the readiness of one mother (participant 6) in answering the interview questions. Although she signed the informed consent form, her answer was limited and did not contribute much to the study.

Recommendation

Through interviews and silent observations of undernutrition in children under 5 years old in the selected barangay, there were several details noted on how to address undernutrition. The interview results show that causes of undernutrition are multi-dimensional and require multi-sectorial interventions. Undernutrition is not only a problem of food availability as outlined above. Hence, the recommendations are directed not only towards the health sectors but also to the government public health professionals and for future research.

Moreover, it is recommended that further studies be done about identifying causes of undernutrition in other settings such as rural areas. In this way, we can understand which aspect has a loophole that needs to be addressed to help curb undernutrition in the country. More studies should also be done about the effectiveness of undernutrition intervention since it has been found that there are limited sustainable intervention programs done in the barangay and it might also be a dilemma in other barangays/areas.

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Abstract

Urinary Tract Infections (UTIs) are one of the most common complications in the Philippines today. This study aimed to determine the antimicrobial effects of *Camellia sinensis* (green tea) against pathogens that cause UTI. The study utilized the convenience sampling technique and interventional-experimental method. Ten healthy participants were screened through routine urinalysis and urine culture; urine was then collected before and after drinking 4.5g of pure green tea leaves brewed with 500 ml of water at 98°C for 5-10 minutes. The pooled first morning urine, 0-4-hour urine, and 4-8-hour urine were mixed, autoclaved, and used as solvent for preparation of Mueller-Hinton agar (MH agar), respectively. Inoculation of the test organisms onto the MH agar were done in triplicates with check plates. After overnight incubation, an average of 140000 Colony Forming Units were significantly reduced in Urine-MH agar with green tea metabolites collected within less than 4 hours showing its greatest activity. It was found out that catechins, which are the main bioactive antibacterial compound in green tea, were effective against *Escherichia coli* and *Klebsiella pneumoniae* but not against multi-drug resistant *Pseudomonas aeruginosa*. Further study can be done to harness the effects of catechins in other food sources other than green tea.

Keywords: *urinary tract infection, Camellia sinensis, catechins*

Urinary Tract Infection (UTI) is the most common bacterial infection and with its increasing recurrence and antimicrobial resistance, it is becoming a great threat to the health of the public.

Alternative antimicrobial agents from plant extracts are of great interest to the world of research. *Camellia sinensis* (green tea), with its safe and non-toxic properties, is one of the plant extracts that can be used as an antimicrobial agent. It is also cheap and easily accessible, making it a great alternative to expensive medicines. The plant is known to have in vitro antimicrobial effects against *E. coli*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae* which are the most common causes of UTI. Hence, in vivo bactericidal effect of the components of green tea needs further research. The major beneficial components of green tea, known as catechins, has been shown to be excreted in the urine (Reygeaert and Jusufi, 2013).

This study used urine metabolites containing catechins and made an agar medium to test for growth inhibition of the selected bacteria.

Health professionals, researchers and lab scientists will have a wider view about catechin

which, is a major component of green tea, and its effects coming from urine metabolites. The public can use green tea as an alternative for antibiotics if proven, which on the other hand is more accessible and cheap. This study verified whether *Camellia sinensis* (green tea) have in vivo bactericidal effect against *E. coli*, *Pseudomonas aeruginosa*, and *Klebsiella pneumoniae*.

Urine is normally sterile, but infection may occur due to bacterial entry from the peri-urethral area. The most common causative agents for UTI include *Escherichia coli*, *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Candida species*, and *Mycobacterium tuberculosis* (Nelson, Kenrad & Williams, 2007).

Urinary Tract Infection (UTI) is one of the most common bacterial infections that leads patients to seek medical care and has been accounted for more than 7 million outpatient visits, one million visits in the emergency department and 100,000 hospital stays every year in the United States (Forbes, Sahm, and Weissfeld, 2015). Antibiotics are usually the first line of treatment for UTI but the duration of its use is dependent on the person's health condition

and the type of bacteria present. Beta lactam activity has currently been ineffective or less effective due to the increasing antibiotic resistance of the pathogen involved (Bennett, Dolin & Blaser, 2015; Lamb, 2017). Hence, alternative analgesic is sometimes prescribed by doctors just to numb the bladder and urethra to ease the burning sensation while urinating (Bennett, et al., 2015). Other studies have shown that pure unsweetened cranberry juice may have little effectivity in preventing symptomatic UTI over a 12-month period although the evidence of its benefits of preventing UTI is small (Jepson, Williams & Craig, 2012).

Green tea

The antimicrobial agents usually used to treat UTIs are becoming less effective and with its increasing resistance, research is focusing back on herbal remedies used to treat UTI. Green tea is a popular drink in Asia and now across the world (Noormandi & Dabaghzade, 2015). An often bitter-tasting tonic, that is now served not only as a drink but also as a pill, is now gaining popularity and becoming a trend in natural medicine. According to Lambert, Sang and Yang (2007), regular consumption of green tea is found to have good effects on human health. Recent studies show that green tea has potential benefits in cardiovascular disease, diabetes, obesity, cancer, oral health, bone health and cognitive function. The component of green tea specifically the catechins provides its antimicrobial effect. Other components found in green tea are caffeine, theanine, saponins, fluorine, GABA (Gamma amino butyric acid), minerals and chlorophyll give its antioxidant and blood pressure regulation effects (Cho, Schiller, Kahng & Oh, 2007; Neyestani, Khalaji & Gharavi, 2007). Although recent studies regarding green tea are encouraging, it is still recommended to further our understanding of its public health benefits.

Catechin

Catechin is a phytochemical, specifically a flavonoid that acts as antioxidant. Green tea contains a lot of bioactive chemicals and catechins being the main cause for its antibacterial effect (Si, Gong, Tsao, Kalab, Yang, & Yin, 2006).

Polyphenolic catechins are found in green tea such as (-)-epicatechin-3-gallate(EGC), (-)

-epigallocatechin (EGC), (-)-epicatechin(EC), and (-)-epigallocatechin-3-gallate(EGCG) (Yang, Arai, & Kusu, 2000; Mueller, 1941). The most abundant are EGC and EGCG and EGC being the only catechin excreted in the urine (Lee, et al., 2017). According to Dehydrated Culture Media (n.d.), over 90% of the total urinary EGC and EC, almost all in the conjugated forms, were excreted between zero and eight hours. Moreover, EC and EGC are found to be heat-stable and can be autoclaved.

The Mayo Clinic (n.d.) cited that catechin prevents the function of DNA gyrase that interfere with the DNA replication. EGC can inhibit the activity of the gyrase enzyme by bidding to the ATP site of the DNA β subunit. It can also generate hydrogen peroxide which can cause bactericidal action and can also damage the bacterial cell membrane by binding the bacterial lipid bilayer (Nathisuwan, Burgess, & Lewis, 2001). Hence, EGC antibacterial effects will be used to study the in vivo antibacterial properties of green tea. EGC as green tea urine metabolites will be tested against *E. coli*, *Pseudomonas aeruginosa*, and *Klebsiella pneumoniae*.

This study intends to determine the antimicrobial effects of Camella sinensis urine metabolites against the Uropathogenic *E. coli*, *P. aeruginosa* and *K. pneumoniae*.

Methodology

Ten healthy individuals and were not daily drinkers of green tea were screened for UTI through routine urinalysis and urine culture to make sure that there was no bacterial infection in the participants that could affect the testing. All were negative for recent UTI and were accepted as participants for the study. The participants signed their informed consents and were briefed for the procedure of the experiment.

An amount of 4.5 grams of pure green tea leaves were brewed with 500 mL of water at 98°C for 5-10 minutes. During urine metabolite collection, they skipped their morning breakfast, then the ten participants composed of five males and five females submitted their first morning urine and immediately after that, they drank 500 mL of brewed green tea for a period of ten minutes. They were instructed to pass all the urine they will void for the 8-hour period after drinking green tea and to consume water and

light snacks only after 4 hours. The participants carefully followed the instructions and passed all their voided urine within the 8-hour period and were rewarded with a heavy meal afterwards.

Urine collected during the 0-4 hour- and 4-8-hour period was logged and proper volume and time were recorded. Each urine sample submitted by the participants was refrigerated immediately then 40 mL aliquot per participant's urine were incubated to room temperature 30 minutes before the scheduled time for pooling and mixing of urine. The pooled first morning urine, pooled 0-4-hour urine and pooled 4-8-hour urine were mixed, autoclaved, and used as solvent for preparation of MH agar, respectively. The 3 groups of Urine-MH agar, the first morning urine, the 4-hour period and 8-hour period were each inoculated with Uropathogenic *E. coli* (UPEC), *Pseudomonas aeruginosa*, and *Klebsiella pneumoniae* using 0.5 McFarland Turbidity Standard. The researchers used quantitative technique utilizing a 10ul-sterile plastic inoculation loop. The researchers also did triplicate testing, check plates, control MH agars, and control Urine-MH agars to support the accuracy of inhibition of bacterial growth. Colony forming units in the agars were counted and recorded. Control agars were also checked for test validity. CFU counted in the control MH agar, Urine-MH agar with first morning urine, 0-4-hour urine and 4-8-hour period were compared with one another.

The Mueller-Hinton agar is a microbial growth medium that is commonly used for antibiotic susceptibility testing. It is a non-selective, non-differential medium which means that almost all organisms plated here will grow (Lamb, 2017). The researchers used 15.2 g of dehydrated MH media and mixed with 400 mL of voided urine pooled from the subjects who were instructed to drink 500 mL of green tea (Noormandi & Dabaghzade, 2015). The mixture was done in an Erlenmeyer flask to achieve good and homogenous mixture of the media to the urine, the media was autoclaved at 15 psi (121 C) for 15 minutes. The media was then cooled down to 20 C before pouring to petri dish. Subsequently, the mixture was poured with controlled amounts to the petri dishes and was cleared off with bubbles and lumps.

Results and Discussion

The antimicrobial activity of *Camelia sinensis* (green tea) when taken orally and passed in the urine against the growth of UPEC, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae* are presented below using the following scheme:

Table 1
Different Media Preparations for Susceptibility Testing

Code	Designation
MH-0	Agar without urine
MH-1	Agar with 1st morning urine
MH-4	Agar with 0-4 hours urine
MH-8	Agar with 0-8 hours urine

The following data shows the growth of the three bacterial strains in the different preparations of Mueller Hinton agar:

Table 2
Growth of Bacterial Strains in Different Media Preparations

Test Organism	MH-0	MH-1	MH-4	MH-8
UPEC	>200000	>200000	50000	100000
<i>P. aeruginosa</i>	>200000	>200000	>200000	>200000
<i>K. pneumoniae</i>	>200000	>200000	70000	100000

Table 2 shows that there is no variation in the growth of test organisms in both plain Mueller Hinton agar and MH-agar prepared with first morning urine. On the other hand, a decrease in colony counts for UPEC with 50000 CFU/mL and *Klebsiella pneumoniae* were shown in the MH agar prepared with urine voided after 0-4 hours of drinking green tea.

Uropathogenic *Escherichia coli* (UPEC)

It was observed in the study that Urine-MH agars made with urine that has green tea metabolites decreased the growth of UPEC significantly in both Urine-MH agar B and Urine-MH agar C, moreover, the agar B produced greater inhibition of growth than the agar C. ECG and EC catechin has significant inhibition strength against UPEC organism. Catechins have the ability to interfere

with DNA replication through inhibition of the function of DNA gyrase. Floroquinolones are the antibiotic of choice against UPEC. Furthermore, floroquinolones, similar with catechins, act against the function of DNA gyrase and thereby producing inhibition against UPEC (Si et al., 2006). The significant decrease of growth can also be the effect of catechins that down regulate the production of phospholipid, carbon and energy metabolism; and production of proteins involved in amino acid synthesis (Cho et al., 2007).

Pseudomonas aeruginosa

It was found out that *P. aeruginosa* growth remained the same for all types of agars. Traces of decreased growth were not observed and thus proved that *P. aeruginosa* is resistant to the antimicrobial properties found in green tea namely catechins. *P. aeruginosa* is increasing in its state of antibiotic resistance all over the world. It evades antibiotic effects through efflux systems, enzyme production, outer membrane protein (porin) loss and target mutations producing multidrug-resistant (MDR) phenotype of *P. aeruginosa* (Zhanel et al., 2006). Mutations in DNA gyrase is common to *P. aeruginosa* which contributes to its increasing antibiotic resistance (Taguri, Tanaka & Kouno, 2004). Furthermore, floroquinolone-resistant strains of *P. aeruginosa* are common due to ability of the *P. aeruginosa* to produce mutations in DNA gyrase thus making EGC and EC catechins which produce antimicrobial effect through DNA gyrase, ineffective to inhibit growth of *P. aeruginosa*. Lastly, low permeability of bacterial cellular envelopes and concerted action of multidrug efflux pumps contributed to high antibiotic resistance of *P. aeruginosa*.

Klebsiella pneumoniae

The study showed that *K. pneumoniae* produced decreased growth in both Urine-MH agar B and Urine-MH agar C. The inhibition of growth is remarkably seen in agar B than in agar C. The strength of inhibition in *K. pneumoniae* is of lesser degree than catechin's effect on UPEC. *K. pneumoniae* has a polysaccharide capsule that increases its defense against antibiotic and catechins (Warren et al., 1999). Nevertheless, the polysaccharide capsule is not sufficient to preserve

the viability of *K. pneumoniae* when inoculated with the catechin found in green tea (Song & Seong, 2004). Floroquinolones are found to be effective against *K. pneumoniae* through altering the effect of the enzyme DNA gyrase which is the same action done by the catechins found in green tea.

Effects of Catechins

There are three mechanisms in which catechins elicit its antimicrobial effect, namely through damage to bacterial cell membrane, inhibition of fatty acid synthesis, and inhibition of enzyme activity (Song & Seong, 2004). Catechins such as EGC and EC found in green tea that passed in urine can cause damage to bacterial cell membrane. *E. coli*, when exposed to green tea polyphenols receives damage in its bacterial cell membrane (Taylor, Hamilton-Miller & Stapleton, 2004). Catechins have reduced action on capsular gram-negative cell membrane and specific bacteria which are able to produce multidrug resistant strains.

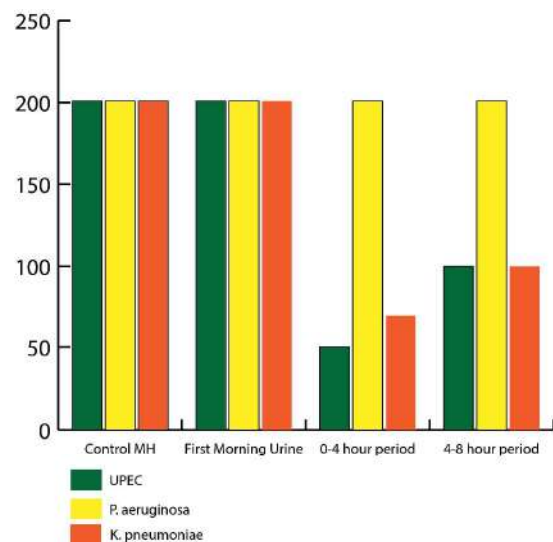


Figure 1. Differential growth patterns of UTI agents in different MH preparations.

Phospholipids are a component of cell membrane which are formed through fatty acid synthesis. Green tea components, specifically EGCG inhibit specific reductases (Chacko, Thambi, Kuttan & Nishigaki, 2010). Nonetheless, EGC and EC are the only catechins found to be excreted in urine.

Lastly, green tea polyphenols produce a great inhibiting effect against enzymes produced by bacteria such as proteinases and phosphatases (Yam, Shah, & Hamilton-Miller, 1997). Previous researchers found that catechins also exhibit effects on DNA replication on its enzyme DNA gyrase through binding to ATP site of DNA gyrase subunit of bacteria. Moreover, ECG shows to inhibit dihydrofolate reductase enzyme (Hamilton-Miller, 1995).

Conclusion and Recommendations

The researchers concluded that antibacterial effect of EGC found in green tea leaves when brewed and drank can be passed in the urine of individuals and is effective against UPEC and *K. pneumoniae*. On the other hand, it has no inhibition activity against a multidrug resistant bacterial strain *Pseudomonas aeruginosa*. Catechins from green tea passed in urine were found to be more effective within 4 hours of drinking green tea. Furthermore, urine passed 8 hours after drinking green tea has reduced UPEC and *K. pneumoniae* growth but not as effective as the 4-hour urine. Therefore, the researchers concluded that drinking green tea can reduce the viability of bacteria in the urinary bladder and effective against urinary tract infection caused by UPEC and *K. pneumoniae*.

It is recommended that future research be done focusing the potent inhibitory effect of EGC found in other food source other than green tea. It is recommended that future researchers do the in vivo experiment without pooling the urine. Studying the inhibition patterns of the catechins in different organisms using lighter suspension are also encouraged. Minimal inhibitory concentration of EGC must also be thoroughly studied before doing an in vivo study. Hopefully, in the future, researchers will be able to study the effects of green tea on infections in humans. This type of research is a critical part of determining the antimicrobial capabilities of green tea. It might possibly be incorporated into research with other antimicrobial compounds. Perhaps naturopathic practitioners could begin to collect data on patients using green tea. With emerging multidrug-resistant organisms and the lack of effective new antimicrobial drugs being produced, we cannot afford to ignore the potential of green tea.

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Danica Arianne T. Pulido and Dina D. Galang

Abstract

This quasi-experimental study, which was anchored on Bandura's self-efficacy theory, investigated the effects of client education with telephone follow-up on adherence to self-management among diabetics. The researchers believe that these are innovative cost-effective strategy to improve the health of the diabetics in rural areas. Purposive sampling was utilized to choose the 79 participants of the study who were assigned to control and experimental groups using random sampling. At pre-test, both the control and experimental groups have *moderate* adherence to blood glucose monitoring practices, medication management, and foot care practices, while fasting blood glucose is *high*. At post-test, the experimental group adherence to medication management and foot care practices is *high*, while blood glucose monitoring practices remains *moderate*, and fasting blood glucose is still *high*. There is no significant difference in the pretest adherence level to self-management among the control and experimental groups in terms of blood glucose monitoring practices, fasting blood glucose, medication management, and foot care practices. There is a significant difference in the pre-and-post-test adherence to self-management among the control and experimental group ($p > .05$); however, in the control group, medication management is not significant. There is significant difference in the gain score in terms of blood glucose monitoring, medication management, and foot care practices between the control group and the experimental group ($p > .05$). Those who are female, younger, and diagnosed to have diabetes for less than five years are more adherent to self-management.

Keywords: *adherence, self- management, diabetics*

Diabetes is a growing health concern globally that threatens the people. Its chronicity brings numerous health hazards to the heart, blood vessels, eyes, kidneys and nerves resulting to diabetes-related complications that could be life threatening or debilitating. According to the International Diabetes Federation [IDF] (2013) almost 382 million people worldwide is living with diabetes. Of these, 37 million live in North America and Caribbean, 35 million in Middle East and North Africa, 56 million in Europe, and 72 million in Southeast Asia.

The Philippines is one of the world's emerging diabetes hotspot for diabetes prevalence. Philippines is home to 3,721,900 people with diabetes and a worryingly large unknown number who are unaware that they have diabetes (IDF, 2017).

Diabetes is a lifetime health and economic threat. To optimize their health, diabetics must adhere to self-management activities such as blood glucose monitoring, medication management, and

foot care practices to control blood glucose level and prevent complications. This is not just for a few months but for a lifetime. According to Breland, Yeh, and Yu (2013), adherence to self-management of diabetics is poor with as low as 50%. They further pointed out that poor adherence is associated with worst health outcomes due to diabetes related complications, including mortality.

Health professionals, especially nurses, play a key role in empowering diabetics' adherence to self- management. One of the strategies that nurses used is client education. Education is an important element in the treatment of diabetics. The American Diabetes Association [ADA] (2015) recommends that all diabetics receive client education on self-management, especially to those with little knowledge about self-management on blood glucose monitoring, medication management, and foot care practices to control blood glucose level and prevent the occurrence of diabetes-related complications

[Niroomand et al., 2015; Garcia et al. as cited in Omar and Lai San (2014)]. Client education can increase the knowledge of diabetics on self-management such as blood glucose monitoring, medication management, and foot care practices. However, after the patient is discharged there is a tendency that he/she might forget the recommended self-care management, thus the nurse should think of a cost-effective approach for continued follow-up support and reinforce client education as necessary especially for those in the rural areas.

Through technological advancement in communication nowadays, when almost every individual can afford to have a phone, programs using this telecommunication technology offer a potential solution to chronic disease management such as diabetes as they can be conveniently accessed from home or office and at any time of the day or night. Nurse telephone follow-up has been found to significantly increase diabetic's self-efficacy in conducting self-management behaviors. Piette, Weinberger, Kraemer and McPhee (2001) posited that telephone follow-up can increase diabetic self-management on blood glucose monitoring and foot care practices adherence. Similarly, in the study of Collins, Niles, Mori, Silberbogen, and Seligowski (2014), it was observed that diabetic participants poses a high level of adherence to blood glucose monitoring, medication management, and feels more confident and motivated to engage in foot care practices with telephone follow-up.

Previous research studies has indicated that by combining client education and telephone follow-up, significant improvement in diabetics' adherence to self-management is being posed (Aliha et al., 2013). However, there is a dearth of the study on client education combined with telephone follow-up in the Philippines especially in rural areas. With this information, it is the researchers' desire to contribute to the advocacy of promoting health to the Filipino people. Through this study, the researchers believe that it can give significant evidence and contribute by discovering innovative cost-effective strategy in improving adherence to self-management among diabetics in rural areas.

This study aimed to determine the effects of client education and client education with telephone follow-up on adherence to self-management among diabetics.

Methodology

This quasi- experimental study utilized 79 diabetic patients were purposively selected and were assigned to either control or experimental group. One group was assigned to client education only (control) while the other was assigned to client education with telephone follow-up (experimental). A self-constructed questionnaire derived from related literature and studies was used to gather the needed data, the respondents' blood glucose monitoring, medication and foot care practices. However, the researchers adapted the ADA (2015) standards to interpret the results of the participants' fasting blood glucose level. The questionnaire is composed of four parts. The first part is designed to identify the demographic profile of the participants including their name, age, gender, educational attainment, the number of years diagnosed with diabetes, telephone or mobile number, alternate contact number, and preferred time to be contacted. Part two of the questionnaire assessed the actual fasting blood glucose level and the respondents' blood glucose monitoring practices. Part three sought to assess the medication management practices and part four assessed the foot care practices. The items for the practices were measured using a three-point Liker scale as interpreted by 1-never, 2- sometimes, and 3-as always. . Reliability tests on Chronbach alpha were found to be 0.787 =blood glucose monitoring; 0.857= medication management; and 0.786=for foot care practices. The questionnaire was translated in Filipino using the forward and backward translation technique.

Ethical Consideration

Ethical guidelines for professional conduct were observed throughout the study. Maintenance of the respondent's privacy and confidentiality of records was observed by concealing their real names and identity. A code number was written on the questionnaire for each participant. Further, the recorded telephone follow-up conversation was after encoding it on their respective telephone follow-up progress sheet.

Analysis of Data

Frequency and Percentage were used to

describe demographic profiles of the participants in the control group and the experimental group. Arithmetic Mean and Standard Deviation were used to determine the pre-test and post-test adherence level to self-management in terms of blood glucose monitoring, medication management, and foot care practices of the participants in the control group and the experimental group. Further, one-way analysis of variance (ANOVA) was used to determine the significant difference between adherence to self-management considering the participants' age, gender, educational attainment, and duration of diabetes independent and t-test was used to determine the difference in the gain score between the pre-test and post-test of participants in the control and experimental group, and to determine the significant difference between adherence to self-management considering the participants' age, gender, educational attainment, and duration of diabetes independent. To determine which specific group in the moderating variable category exhibits a significant difference in adherence to self-management, Post Hoc Analysis Games-Howell Test was used.

Results and Discussion

The Pre-test Adherence Level to Self-management Among Diabetics in the Control Group and the Experimental Group

Blood Glucose Monitoring: Practices and Fasting Blood Glucose

Table 1 shows that the control group has an overall mean of 1.81 ($SD = .39$), while the experimental group has an overall mean of 1.79 ($SD = .31$), which is both interpreted as *moderate* adherence. The result implied that before the intervention, both groups have moderate adherence level to blood glucose monitoring-practices.

The findings in this study were consistent with the findings of Vincze, Barner, and Lopez as cited in Patton (2015) where they observed that the adherence level to blood glucose monitoring practices of diabetic patients is only 52% suggesting low or moderate adherence level. According to Ong, Chua, and Ng (2014), the factors that greatly influence adherence to blood glucose monitoring practices of diabetics are mainly related to cost, inconvenience, and lack of motivation, knowledge, and self-efficacy.

Table 1.

Pre-test Adherence Level to Blood Glucose Monitoring Practices of the Control Group and the Experimental Group

No.	Item	Control Group			Experimental Group		
		M	SD	DR	M	SD	DR
1.	I check my blood glucose level at home.	1.92	.77	Sometimes	1.62	.74	Sometimes
2.	I check my blood glucose level when I feel sick.	1.69	.73	Sometimes	1.80	.72	Sometimes
3.	I go to any healthcare facility to check my blood glucose level.	1.77	.78	Sometimes	1.77	.73	Sometimes
4.	I follow the step by step procedure in performing blood glucose monitoring.	1.90	.68	Sometimes	2.00	.68	Sometimes
5.	I adjust the depth of the lancet to minimize discomfort and avoid bruising.	1.92	.81	Sometimes	1.92	.76	Sometimes
6.	I observe proper handling of the glucometer strips.	1.67	.66	Sometimes	1.65	.77	Sometimes
OVER-ALL MEAN		1.81	.39	Sometimes	1.79	.31	Sometimes
		VI: Moderate					

Note. Low Adherence = 1.00 - 1.49; Moderate Adherence = 1.50 - 2.49; High Adherence = 2.50 - 3.00.
VI = Verbal Interpretation

To confirm the reason for the results, the researcher interviewed the participants. During the interview, most of the participants relate that the costly nature of having their blood glucose checked affected their blood glucose monitoring-practices since majority of them do not have a stable income, as well as scarcity of glucometer strips provided at their respective health centers.

Table 2 shows that before the client education intervention, the participants in the control group had a fasting blood glucose overall mean of 193.85 ($SD = 98.29$), which is interpreted as high, while the experimental group had a fasting blood glucose overall mean of 180.95 ($SD = 61.46$), which is also interpreted high.

Table 2.

Pre-test Fasting Blood Glucose Level of the Control Group and the Experimental Group

Pre-test Fasting Blood Glucose	N	Min	Max	Mean	SD	VI
Control	39	86.00	500.00	193.85	98.29	High
Experimental	40	105.00	352.00	180.95	61.46	High

Note.

FBS Values: Low = < 80; Normal = 80 - 130; High = > 130; VI-Verbal Interpretation

The result implied that before the intervention, both groups have poor glycemic control as shown on the high fasting blood glucose results. The poor glycemic control of participants is related to their moderate adherence to self-management in terms of blood glucose monitoring-practices and their medication management, since the two mentioned self-management aid diabetics to control and maintain their fasting blood glucose level within normal range. This result is comparable with the result of the study of Adisa, Fakeye and Fasanmade (2011), where they observed that out of 140 diabetic participants, 59.7% have poor glycemic control as evident in their fasting blood glucose results which is above the normal range of 80-130 mg/dl set by the ADA (2015).

Medication Management

Table 3 presents the medication management adherence level before the intervention. It shows that the control group has an overall mean of 2.10 ($SD = .56$), while the experimental group has an overall mean of 1.96 ($SD = .70$) which is interpreted as *moderate* adherence.

Table 3.

Pre-test Adherence Level to Medication Management of the Control Group and the Experimental Group

No.	Item	Control Group			Experimental Group		
		M	SD	DR	M	SD	DR
1.	I take my medicine as prescribed by my healthcare provider.	2.13	.80	Sometimes	1.87	.82	Sometimes
2.	I take my medicine on time	2.20	.83	Sometimes	1.82	.78	Sometimes
3.	I follow the right frequency in taking my medication.	2.02	.78	Sometimes	2.00	.78	Sometimes
4.	*I forget to take my medicine	2.13	.77	Sometimes	2.05	.78	Sometimes
5.	*When I feel any side effects of the medication, I do not take the medicine anymore.	2.02	.74	Sometimes	2.07	.82	Sometimes
OVER-ALL MEAN		2.10	.56	Sometimes	1.96	.70	Sometimes VI=Moderate

The result implied that before the intervention, both groups have the same adherence level to medication management, which is moderate. To confirm the reason for the results, the researcher interviewed the participants. During the interview, most of the participants relate that they tend to forget to take their medicine (a) when they are busy doing house chores or looking after their grandchildren, (b) when the supplies of free medicine provided by their respective health centers run-out, and (c) buying medicine is not an option because they would rather use their money to buy food instead of medicine. The result of the present study is supported by several studies. Mukherjee, Sharmasarkar, Das, Bhattacharyya and Deb (2013) claimed that the adherence rate of diabetics to medication management is only 57.7% which reflects the lack of knowledge on the complications of diabetes.

Foot Care Practices

Table 4 presents the foot care practices adherence level before the intervention. It shows that the control group had an overall mean of 1.85 (*SD* = .36), while the experimental group had an overall mean of 1.82 (*SD* = .31), which is both interpreted as moderate adherence.

Table 4.

Pre-test Adherence Level to Foot Care Practices of the Control Group and the Experimental Group

No.	Item	Control Group			Experimental Group		
		M	SD	DR	M	SD	DR
1.	I assess my feet and my toes for:						
	a. Blister	1.87	.83	Sometimes	1.85	.77	Sometimes
	b. Inflammation	1.77	.78	Sometimes	1.77	.77	Sometimes
	c. Dry skin	1.79	.77	Sometimes	1.75	.74	Sometimes
	d. Cracks	1.79	.77	Sometimes	1.65	.80	Sometimes
2.	I consult to a doctor if I observe any problems	1.64	.74	Sometimes	1.95	.75	Sometimes
3.	I wipe my feet using a dry towel	1.77	.81	Sometimes	1.95	.68	Sometimes
4.	I wipe in between my toes using a dry towel	1.92	.74	Sometimes	1.80	.76	Sometimes
5.	I use lotion to keep my feet moisturized	1.92	.70	Sometimes	1.72	.75	Sometimes
6.	I wear a pair of slippers to protect my feet	2.30	.65	Sometimes	1.90	.71	Sometimes
7.	I do foot exercises	1.69	.77	Sometimes	1.90	.71	Sometimes
OVER-ALL MEAN		2.10	.56	Sometimes	1.96	.70	Sometimes VI=Moderate

Note: *Low Adherence* = 1.00 - 1.49; *Moderate Adherence* = 1.50 - 2.49; *High Adherence* = 2.50 - 3.00
 VI=Verbal Interpretation

The result implied that before the intervention, both groups have the same adherence level to foot care practices, which is moderate. To confirm the reason for the results, the researcher interviewed the participants. During the interview, most of the participants relate that they have limited knowledge on foot care practices, and consulting a doctor for foot problem is expensive, since most of the time the Barangay doctor advised them to consult a specialist. In a study conducted in Nigeria by Desalu et al., (2011), they stated that diabetic foot complications due to low or moderate adherence to foot care practices are leading

cause of mortality in developing countries. Of 352 diabetic participants, only 10.2% had good foot care practices. Most diabetic participants (78.4%) with poor practice had poor knowledge of foot care practices.

The Post-test Adherence Level to Self-Management Among Diabetics in the Control Group and the Experimental Group

Blood Glucose Monitoring: Practices and Fasting Blood Glucose

Table 5 presents the descriptive statistics of blood glucose monitoring practices adherence level before the intervention. It shows that the control group has an overall mean of 1.99 ($SD = .41$), while the experimental group has an overall mean of 2.11 ($SD = .29$), which is both interpreted as *moderate* adherence.

Table 5.

Post-test Adherence Level to Blood Glucose Monitoring Practices of the Control Group and the Experimental Group

No.	Item	Control Group			Experimental Group		
		M	SD	DR	M	SD	DR
1.	I check my blood glucose level at home.	2.00	.86	Sometimes	1.77	.89	Sometimes
2.	I check my blood glucose level when I feel sick.	2.00	.69	Sometimes	2.22	.73	Sometimes
3.	I go to any healthcare facility to check my blood glucose level.	2.00	.65	Sometimes	2.37	.49	Sometimes
4.	I follow the step by step procedure in performing blood glucose monitoring.	2.02	.67	Sometimes	2.40	.50	Sometimes
5.	I adjust the depth of the lancet to minimize discomfort and avoid bruising.	2.05	.65	Sometimes	2.07	.52	Sometimes
6.	I observe proper handling of the glucometer strips	1.85	.71	Sometimes	1.82	.93	Sometimes
OVER-ALL MEAN		1.99	.41	Sometimes	2.11	.29	Sometimes VI=Moderate

Note: *Low Adherence* = 1.00 - 1.49; *Moderate Adherence* = 1.50 - 2.49; *High Adherence* = 2.50 - 3.00; VI=Verbal Interpretation

When Table 1 and Table 5 are compared, it is observed that after the intervention, both groups have a slight increase in their adherence to blood glucose monitoring -practices; however, both their adherence level is still *moderate*.

Table 6 further shows that the participants in the control group has a fasting blood glucose overall mean of 181.10 ($SD = 80.67$), which is interpreted as high while the participants in the experimental group has a fasting blood glucose overall mean of 149.40 ($SD = 34.59$), which is also interpreted *high*.

Table 6.

Post-test Fasting Blood Glucose Level of the Control Group and the Experimental Group

Post-test Fasting Blood Glucose	N	Min	Max	Mean	SD	VI
Control	39	94.00	395.00	181.10	80.67	High
Experimental	40	95.00	250.00	149.40	34.59	High

Note. *FBS Values*: Low= <80; Normal=80-130; High= >130.

Though the findings showed that the participants fasting blood glucose is still *high*, it can be observed that that the reduction in fasting blood glucose is higher for the experimental group who received client education with telephone follow-up compared to the control group who received client education

intervention only. This implies that client education and telephone follow-up can reduce fasting blood glucose of diabetics more effectively compared to client education alone; in addition, the poor glycemic control of both groups is the reflection of their moderate post-test adherence to blood glucose monitoring-practices. The result of this study supported the belief that traditional client education focuses on the transfer of the information which often does not result in the desired change in behavior or clinical outcome, hence, client education alone is not enough to fully enhance the adherence of diabetics in blood glucose monitoring practices (Gillani, Sulaiman, Sundram, Victor, & Abdullah, 2012).

Medication Management

Table 7 presents the medication management adherence level after the intervention. It shows that the control group has an overall mean of 2.11 ($SD = .562$), which is interpreted as *moderate* adherence. While the experimental group has an overall mean of 2.50 ($SD = .37$) which is interpreted as *high* adherence. The result implies that participants in the experimental group who received client education with telephone follow-up has increased their adherence to medication management from moderate adherence to high adherence, hence, shows the effectiveness of client education with telephone follow-up in enhancing adherence of the experimental group to medication management compared to the control group who received client education only, their adherence to medication management though increased is still at moderate level. In the study of Chen, Tseng, and Cheng (2013) diabetics with high or intermediate continuity of care through telephone follow-up were more likely to be adherent to their medication management.

Table 7.

Post-test Adherence Level to Medication Management of the Control Group and the Experimental Group

No.	Item	Control Group			Experimental Group		
		M	SD	DR	M	SD	DR
1.	I take my medicine as prescribed by my healthcare provider.	2.20	.73	Sometimes	2.45	.50	Sometimes
2.	I take my medicine on time	2.38	.67	Sometimes	2.50	.51	Always
3.	I follow the right frequency in taking my medication	2.08	.74	Sometimes	2.50	.51	Always
4.	I forget to take my medicine	1.87	.73	Sometimes	2.55	.50	Always
5.	When I feel any side effects of the medication, I do not take the medicine anymore.	2.02	.71	Sometimes	2.52	.50	Always
OVER-ALL MEAN		2.11	.52	Sometimes VI=Moderate	2.50	.37	0.37 VI=High

Note: Low Adherence = 1.00 - 1.49; Moderate Adherence = 1.50 - 2.49; High Adherence = 2.50 - 3.00 *Decoded VI=Verbal Interpretation

Foot Care Practices

Table 8 presents the descriptive statistics of foot care practices adherence level after the intervention. It shows that the control group has an overall mean of 2.08 ($SD = .40$), which is both interpreted as *moderate* adherence. While the experimental group has an overall mean of 2.58 ($SD = .31$), which is interpreted as *high* adherence.

Table 8

Post-test Adherence Level to Foot Care Practices of the Control Group and the Experimental Group

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No.	Item	Control Group			Experimental Group		
		M	SD	DR	M	SD	DR
1.	I assess my feet and my toes for:						
	a. Blister	1.92	.74	Sometimes	2.60	.50	Always
	b. Inflammation	2.13	.66	Sometimes	2.62	.49	Always
	c. Dry skin	2.28	.68	Sometimes	2.52	.50	Always
	d. Cracks	2.18	.64	Sometimes	2.55	.55	Always
2.	I consult to a doctor if I observe any problems	1.95	.65	Sometimes	2.62	.49	Always
3.	I wipe my feet using a dry towel	2.02	.71	Sometimes	2.65	.48	Always
4.	I wipe in between my toes using a dry towel	1.92	.70	Sometimes	2.45	.50	Sometimes
5.	I use lotion to keep my feet moisturized	2.15	.67	Sometimes	2.50	.50	Always
6.	I wear a pair of slippers to protect my feet	2.41	.50	Sometimes	2.65	.48	Always
7.	I do foot exercises	1.87	.73	Sometimes	2.65	.48	Always
OVER-ALL MEAN		2.08	.40	Sometimes VI=Moderate	2.58	.31	Always VI=Moderate

Note: Low Adherence = 1.00 - 1.49; Moderate Adherence = 1.50 - 2.49; High Adherence = 2.50 - 3.00 *Decoded
VI=Verbal Interpretation

The result implies that participants in the experimental group who received client education with telephone follow-up has increased their adherence to foot care practices from *moderate* adherence to *high* adherence, hence, shows the effectiveness of client education with telephone follow-up in enhancing adherence of the experimental group to foot care practices. The findings in this study were consistent with the study findings of Nesari, Zakerimoghadan, Rajab, Bassampour, and Faghihzadeh (2010) where out of 61 diabetic participants that attended a 3-day client education program and afterward randomly assigned to one of the experimental or control group. A telephone follow-up program was applied to the experimental group for 3 months, twice per week for the first month and weekly for the second and third months. The result of their study revealed a significant difference between the control and the experimental groups in their adherence to foot care practices.

Difference in the Pre-test Adherence Level to Self-Management Among Diabetics in the Control Group and the Experimental Group

As shown in Table 9 the pre-test adherence of the control group in terms of blood glucose monitoring has a mean of 1.81($SD = .39$); fasting blood glucose has a mean of 193.85 ($SD = 98.29$); medication management has a mean of 2.10 ($SD = .56$); and foot care practices has a mean of 1.85($SD = .36$). Pre- test adherence level of the experimental group in terms of blood glucose monitoring has a mean of 1.79 ($SD = .31$); fasting blood glucose has a mean of 180.95 ($SD = 61.46$); medication management has a mean of 1.96 ($SD = .70$); and foot care practices has a mean of 1.82($SD = .31$).The difference in both groups for blood glucose monitoring practices adherence level is ($t = .20, p = .84$); for fasting blood glucose is ($t = .70, p = .49$); for medication management is ($t = .96, p = .34$); and for foot care practices is ($t = .31, p = .76$).

Table 9

Difference in Pre-test Adherence Level to Self-management of the Control Group and the Experimental

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Group								
Self- management	Group	N	Mean	SD	t	p	VI	
Pre-test Blood Glucose	Control	39	1.81	.39	.20	.84	Not Significant	
	Experimental	40	1.79	.31				
Pre-test Fasting Blood Glucose	Control	39	193.85	98.29	.70	.49	Not Significant	
	Experimental	40	180.95	61.46				
Pre-test Medication Management	Control	39	2.10	.56	.96	.34	Not Significant	
	Experimental	40	1.96	.70				
Pre-test Foot Care Practices	Control	39	1.85	.36	.31	.76	Not Significant	
	Experimental	40	1.82	.31				

Note. *SD*=Standard Deviation; Significant at .05 level.

Based on the results shown in Table 9, it was revealed that there is no significant difference in the pre-test adherence level to self-management of the control and the experimental groups. This implies that the pre-test adherence level of both groups is comparable. Low or moderate adherence to diabetes self-management leads to poor glycemic control and increases the risk of developing diabetes-related complications that lead to poor health outcomes and decreased quality of life (Ogbera&Adeyemi-Doro, 2011).

Difference Between Pre-test and Post-test Adherence Level to Self-management in the Control Group

Table 10 reveals that there is a significant difference in the pre-test and post-test adherence level to blood glucose monitoring practices of the control group with t-value of -4.31 ($p = .00$); fasting blood glucose with a t-value of 2.19 ($p = .03$), and foot care practice with a t-value of -6.68 ($p = .00$). On the other hand, it was found out that there is no significant difference in terms of medication management. This insignificance is related to the scarcity of free medicine from the health centers as verbalized by the participants upon the interview of the researchers.

Table 10

Difference in the Pre-and Post-Test Adherence Level to Self-management of the Control Group

Self- management	Test	Mean	SD	t	p	VI
Blood Glucose Monitoring Practices	Pre-test	1.81	0.39	-4.31	.00	Significant
	Post-test	1.99	0.41			
Fasting Blood Glucose	Pre-test	193.85	98.29	2.19	.03	Significant
	Post-test	181.10	80.67			
Medication Management	Pre-test	2.10	0.56	-0.20	.84	Not Significant
	Post-test	2.11	0.52			
Foot Care Practices	Pre-test	1.85	0.36	-6.68	.00	Significant
	Post-test	2.08	0.40			

Note. *SD*=Standard Deviation; Significant at .05 level.

The result implied the effectiveness of client education intervention on adherence to blood glucose monitoring and foot care practices, as well as in reducing the fasting blood glucose level of diabetic participants but not significantly effective in improving adherence to medication management. The decrease in fasting blood glucose level is clinically significant on the Healthcare standpoint. Millar, Cauch-Dudek, and Shah (2010) claimed that client education is effective in increasing diabetes self-management behavior such as blood glucose monitoring practices. Moreover, Bonner, Foster, and Spears-Lanoix (2016) stated

that lack of knowledge is a contributing factor to why diabetics do not comply with foot care practices; client education can lead to improving knowledge, thus, improving their adherence to foot care practices.

Difference Between Pre-test and Post-test Adherence Level to Self-management in the Experimental Group

Table 11 shows that there is a significant difference in the pre-test and post-test adherence level to self-management of the experimental group. Blood glucose monitoring-practices has a t -value of -8.02 ($p = .00$); fasting blood glucose level has a t -value of 4.97 ($p = 0.00$); medication management has a t -value of -5.94 ($p = 0.84$); and foot care practices has a t -value of -19.82 ($p = .00$).

Table 11

Difference in the Pre-and Post-Test Adherence Level to Self-management of the Experimental Group

Self- management	Test	Mean	SD	t	p	VI
Blood Glucose Monitoring Practices	Pre-test	1.79	.31	-8.01	.00	Significant
	Post-test	2.11	.29			
Fasting Blood Glucose	Pre-test	180.95	61.46	4.97	.00	Significant
	Post-test	149.40	34.59			
Medication Management	Pre-test	1.96	.70	-5.93	.00	Significant
	Post-test	2.50	.37			
Foot Care Practices	Pre-test	1.82	.31	-19.82	.00	Significant
	Post-test	2.58	.31			

Note. SD =Standard Deviation; Significant at .05 level.

The result implied the effectiveness of client education with telephone follow-up in the adherence level to self-management of the respondents. The results were consistent with the study of Kaur, Kajal, Kaur, and Singh (2015) who found out that combining client education with telephone follow-up has a significant effect on fasting blood glucose levels of diabetics. Further, they reported that diabetics who received client education with telephone follow-up reported no problem with adherence to the medication management compared to the 45% of the control group who encountered problem in adhering to medication management. Furthermore, the study of Fan, Sidani, Cooper-Brathwaite, and Metcalfe (2013) showed that participants in the experimental group who received the client education with telephone follow-up posed a significant increase in adherence to self-management in terms of foot care practices compared to the participants in the control group.

Difference in the Gain Score in Terms of Blood Glucose Monitoring, Medication Management, and Foot Care Practices Between the Control Group and the Experimental Group

Table 12 revealed that there is a significant gain score on the adherence level to self-management between the control group and the experimental group in terms of blood glucose monitoring practices ($t = -2.50$, $p = .01$); fasting blood glucose ($t = 2.18$, $p = .03$); medication management ($t = -5.07$, $p = .00$); and foot care practices ($t = -.10$, $p = .00$). This implied that health education in combination, with telephone follow-up, is effective in increasing the adherence level to self-management of the participants.

Table 12.

Difference in the Gain Score on Adherence Level to Self-management Between the Control Group and the

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<i>Experimental Group</i>								
Self- management	Test	N	Mean	SD	t	p	VI	
Blood Glucose	Control	39	.17	.25	-2.50	.01	Significant	
Monitoring Practices	Experimental	40	.32	.25				
Fasting blood	Control	39	-12.74	36.41	2.18	.03	Significant	
glucose	Experimental	40	-31.55	40.18				
Medication	Control	39	.01	.32	-5.07	.00	Significant	
Management	Experimental	40	.54	.57				
Foot Care Practices	Control	39	.23	.22	-10.01	.00	Significant	
	Experimental	40	.76	.24				

Note. *SD*=Standard Deviation; Significant at .05 level.

The findings supports with the Malaysian study, where, mean adherence gain score is significantly higher in the group that received client education with telephone follow-up intervention that in the group that received usual care such as client education intervention only (Tan, Magarey, Chee, Lee, & Tan, 2011).

Difference in the Adherence to Self-Management of the Control Group and the Experimental Group in Terms of Age

Participants of the control group were categorized into 28-40 years old, 41-60 years old, and 61 years old and above. Table 13 shows that participants aged 28-40 years old have higher mean of 2.21(*SD* = .30) adherence to blood glucose monitoring practices compared to participant age 41-60 years old, and 61 and above. Those aged 41-60 have a higher mean (*m* = 203.41, *SD* = 91.51) adherence to fasting blood glucose compared to participants aged 28-40 and 61 and above. Those aged 28-40 have higher mean of 2.35 (*SD* = .54) adherence to medication management compared to aged 41-60 and 61 and above. However, the difference is not statistically significant. Meanwhile, there is a significant difference in adherence to foot care practices between ages 28-40 with a mean of 2.34 (*SD* = .22) and aged 41-60 and 61-and above.

Table 13

Difference in the Adherence to Self-management in Terms Blood Glucose Monitoring Practices, Fasting

Blood Glucose, Medication Management, and Foot Care Practices of the Control Group when Age is Considered

Self-management	Age	N	Mean	SD	t	p	VI
Blood Glucose Monitoring Practices	28-40 years old	8	2.21	.30	1.69	.24	Not Significant
	41-60 years old	17	1.89	.43			
	61 and above	14	1.98	.41			
	Total	39	1.99	.41			
Fasting blood glucose	28-40 years old	8	147.50	53.15	1.44	.25	Not Significant
	41-60 years old	17	203.41	91.51			
	61 and above	14	173.21	76.04			
	Total	39	181.10	80.67			
Medication Management	28-40 years old	8	2.35	.54	1.47	.20	Not Significant
	41-60 years old	17	1.98	.51			
	61 and above	14	2.14	.50			
	Total	39	2.11	.52			
Foot Care Practices	28-40 years old	8	2.34	.22	4.53	.01 *.00	Significant
	41-60 years old	17	2.15	.47			
	61 and above	14	1.86	.30			
	Total	39	2.08	.40			

Note. *SD*=Standard Deviation; Significant at .05 level. *Welch *F*

These results implied that irrespective of age, diabetics' adherence to blood glucose monitoring, fasting blood glucose, and medication management is not affected. Since the control group has three categories and the result is significant, Games-Howell test for multiple comparison was performed to determine which age group exhibits the significant difference. It was showed that participants aged 61 and above presents the most significant difference in foot practices. It implied that the older the diabetics, the lower are their adherence to foot care. In the experimental group, the age category of the participants is only two compared to the control group that has three categories, since only two participants in the experimental group fall on the age group 28-40 years old.

Table 14 shows that participants aged 61 and above have higher mean of 2.07 (*SD* = .30) adherence to blood glucose monitoring practices compared to participants aged 41-60 years old.; those aged 61 and above have higher mean 150.88 (*SD*= 34.29) fasting blood glucose level compared to participants aged 41-60 years old, and those aged 61 and above have higher mean 2.53 (*SD* = .41) adherence to medication management compared to participants aged 41-60 years old. However, the difference is not statistically significant. On the other, participants aged 41-60 have a higher mean 2.68 (*SD* = .28) adherence to foot care management compared to those aged 61 and above and the difference is statistically significant.

Table 14

Difference in the Adherence to Self-management in terms Blood Glucose Monitoring Practices, Fasting

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<i>Blood Glucose, Medication Management, and Foot Care Practices of the Experimental Group when Age is Considered</i>							
Self-management	Age	N	Mean	SD	t	p	VI
Blood Glucose Monitoring Practices	41-60 years old	21	2.07	.30	-1.20	.24	Not Significant
	61 and above	17	2.19	.27			
Fasting blood glucose	41-60 years old	21	148.80	37.12	-0.18	.86	Not Significant
	61 and above	17	150.88	34.29			
Medication Management	41-60 years old	21	2.49	.36	-0.27	.79	Not Significant
	61 and above	17	2.53	.41			
Foot Care Practices	41-60 years old	21	2.68	.28	2.63	.01	Significant
	61 and above	17	2.43	.30			

Note. *SD*=Standard Deviation; Significant at .05 level.

Like the participants of the control group, it shows that irrespective of age diabetics in the experimental group's adherence to blood glucose monitoring practices and medication management and their fasting glucose level is not affected. However, the older a diabetic age, the lower is his or her adherence.

The result of the study is supported by Ahmad, Ramli, Islahudin, and Paraidathathu (2013), observation that age of diabetic patients was a factor related to non-adherence. A reduction in age by 1 year increased the possibility of non-adherence by 3.4% (odds ratio 0.967 [95% CI: 0.948–0.986]).

Difference in the Adherence to Self-Management of the Control Group and the Experimental Group in Terms of Gender

Table 15 shows the difference in adherence to blood glucose monitoring practices of the control group considering their gender. The male participants of the control group ($N=15$) has a mean of 1.80 ($SD = .36$), while the female participants ($N = 24$) has a mean of 2.10 ($SD = .40$), with a t -value of -2.30, $p = .02$.

The result revealed that female participants in the control group have higher mean adherence to blood glucose monitoring practices compared to male participants, and the difference is statistically significant. Hence, the null hypothesis is rejected. However, there is no significant difference in the experimental group in terms of post glucose monitoring practices when gender is considered. Table 15 further shows that there is no significant difference in post-test fasting blood glucose, and post-test medication management of the control group and experimental group when gender is considered. These implied that irrespective of gender, diabetics' adherence to post-test fasting blood glucose and post-test medication management is not affected. Further, there is no significant difference in the foot care practices of the participants in the control group. On the other hand, it is shown that there is a significant difference in adherence to blood glucose monitoring practices of the experimental group considering their gender. The male participants of the experimental group ($N = 15$) has a mean of 2.44 ($SD = .28$), while the female participants ($N = 25$) has a mean of 2.67 ($SD = 0.31$), with a t -value of -2.35, $p = .02$. The result revealed that female participants have higher mean adherence to foot care practices compared to male participants. This result was consistent with the study done by Laclé and Valero-Juan (2012), where they conducted a prospective study with seven years of follow-up identified that being a male was a risk factor for amputation among patients with diabetic feet compared to female, since female diabetics appears to adhere more to foot care practices compared to male diabetics.

Table 15

Difference in the Adherence to Self-management in Terms Blood Glucose Monitoring Practices, Fasting

Blood Glucose, Medication Management, and Foot Care Practices of the Control Group and Experimental Group when Gender is Considered

Self-management	Grop	Gender	N	Mean	SD	t	p	VI
Post-test Blood Glucose ‘ Monitoring-Practices	Control	Male	15	1.80	.36	-2.30	.02	Significant
		Female	24	2.10	.40			
	Experimental	Male	15	1.08	.37	-1.20	.24	Not Significant
		Female	25	2.13	.27			
Post-test Fasting Blood Glucose	Control	Male	15	209.53	103.88	1.58	.13	Not Significant
		Female	24	163.33	57.68			
	Experimental	Male	15	159.00	45.56	1.20	.24	Not Significant
		Female	25	143.64	25.33			
Post-test Medication Management	Control	Male	15	2.01	.59	-0.94	.35	Not Signifi- cant
		Female	24	2.17	.47			
	Experimental	Male	15	2.43	.40	-1.03	.31	Not Significant
		Female	25	2.55	.36			
Post-test Foot Care Practices	Control	Male	15	1.94	.36	-1.81	.07	Not Significant
		Female	24	2.17	.41			
	Experimental	Male	15	2.44	.28	-2.35	.02	Significant
		Female	25	2.67	.31			

Note. *SD*=Standard Deviation; *Significant at .05 level*.

Difference in Adherence to Self-management of the Control Group and the Experimental Group in Terms of the Number of Years Diagnosed with Diabetes

Table 16 shows the difference in adherence to blood glucose monitoring practices of the control group considering the number of years they were diagnosed to have diabetes. The participants of the control group who were diagnosed to have diabetes for 5 years and less ($N = 29$) has a mean of 2.14 ($SD = 0.34$), while participants who were diagnosed to have diabetes for more than 5 years ($N = 10$) has a mean of 1.55 ($SD = 0.24$), with a t -value of -5.99, $p = .00$. This implied that diabetics who have diabetes for 5 years and less are more adherent to blood glucose monitoring practices compared to diabetics who have diabetes for more than 5 years.

On the other hand, there is no significant difference in adherence to blood glucose monitoring practices of the experimental group. It implied that irrespective of the number of years diagnosed with diabetes, their adherence to blood glucose monitoring practices is not affected. In terms of post-test fasting blood glucose, it was shown that the participants of the control group who are diagnosed to have diabetes for 5 years and less ($N = 29$) has a mean of 149.65 ($SD = 44.49$), while participants who are diagnosed to have diabetes for more than 5 years ($N = 10$) has a mean of 272.30 ($SD = 94.30$), with a t -value of -3.96, $p = 0.00$. In the experimental group, the participants who are diagnosed to have diabetes for 5 years and less ($N = 16$) has a mean of 132.69 ($SD = 19.48$), while participants who are diagnosed to have diabetes for more than 5 years ($N = 24$) has a mean of 160.54 ($SD = 38.17$), with a t -value of -3.03, $p = .00$.

Table 16

Difference in the Adherence to Self-management in terms Blood Glucose Monitoring Practices, Fasting

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Blood Glucose, Medication Management, and Foot Care Practices of the Control Group and Experimental Group when the Number of Years Diagnosed with Diabetes is Considered								
Self-management	Grop	Years Dx	N	Mean	SD	t	p	VI
Post-test Blood Glucose Monitoring-Practices	Control	5 and less	29	2.14	.34	5.99	.00	Significant
		More than 5	10	1.55	.24			
	Experimental	5 and less	16	2.20	.29	1.54	.13	Not Significant
		More than 5	24	2.05	.28			
Post-test Fasting Blood Glucose	Control	5 and less	29	149.65	44.49	-3.96	.00	Significant
		More than 5	10	272.30	94.30			
	Experimental	5 and less	16	132.69	19.48	-3.03	.00	Significant
		More than 5	24	160.54	38.17			
Post-test Medication Management	Control	5 and less	29	2.29	.48	5.49	.00	Significant
		More than 5	10	1.62	.26			
	Experimental	5 and less	16	2.67	.28	2.67	.01	Significant
		More than 5	24	2.39	.39			
Post-test Foot Care Practices	Control	5 and less	29	2.17	.41	2.56	.01	Significant
		More than 5	10	1.82	.27			
	Experimental	5 and less	16	2.67	.29	1.55	.13	Not Significant
		More than 5	24	2.52	.32			

Note. *SD*=Standard Deviation; Significant at .05 level.

The result revealed that, the participants who are diagnosed to have diabetes for more than 5 years have higher mean fasting glucose level compared to participants who are diagnosed to have diabetes for 5 years and less, and the difference is statistically significant. This implied that the longer a diabetic is diagnosed to have diabetes the higher the fasting blood glucose level.

In terms of post-test medication management, The participants of the control group who are diagnosed to have diabetes for 5 years and less ($N = 29$) has a mean of 2.29 ($SD = .48$), while participants who are diagnosed to have diabetes for more than 5 years ($N = 10$) has a mean of 1.62 ($SD = .26$), with a t -value of 5.49, $p = .00$. In the experimental group, the participants who are diagnosed to have diabetes for 5 years and less ($N = 16$) has a mean of 2.67 ($SD = .28$), while participants who are diagnosed to have diabetes for more than 5 years ($N = 24$) has a mean of 2.39 ($SD = .39$), with a t -value of 2.67, $p = .01$. The result revealed that the participants who are diagnosed to have diabetes for 5 years and less have higher post-test medication adherence level compared to participants who are diagnosed to have diabetes for more than 5 years, and the difference is statistically significant. This implied that the longer the years the participants have diabetes, the lower is the adherence to medication management.

Table 16 further reveals the difference in adherence to foot care practices of the control group considering the number of years they are diagnosed to have diabetes. The participants of the control group who are diagnosed to have diabetes for 5 years and less ($N = 29$) has a mean of 2.17 ($SD = .41$), while participants who are diagnosed to have diabetes for more than 5 years ($N = 10$) has a mean of 1.82 ($SD = .27$), with a t -value of 2.56, $p = .01$. The result revealed that participants who are diagnosed to have diabetes for 5 years and less have higher mean adherence to foot care practices compared to participants who are diagnosed to have diabetes for more than 5 years, and the difference is statistically significant. This implied that the shorter a patient has diabetes, the higher is the adherence to foot care practices. However, the participants of the experimental group who are diagnosed to have diabetes for 5 years and less ($N = 16$) has a mean of 2.67 ($SD = .29$), while participants who are diagnosed to have diabetes for more than 5 years ($N = 24$) has a mean of 2.52 ($SD = .32$), with a t -value of 1.55, $p = .13$. The result revealed that participants who are diagnosed to have diabetes for 5 years and less have higher mean adherence to foot care practices compared to participants who are diagnosed to have diabetes for more than 5 years, and the difference is statistically significant. This implied that the shorter a patient has diabetes, the higher is the adherence to foot care practices.

= 24) has a mean of 2.52 ($SD = .32$), with a t -value of 1.55, $p = .13$. The difference is not significant. The result implied that irrespective of the number of years diagnosed with diabetes, diabetics' adherence to foot care practices is not affected.

The result of this study was consistent with the study done in the United Arab Emirates by Arifulla, John, Sreedharan, Muttappallymyalil, and Basha (2014) where they proved that the duration of diabetes has a negative relationship to adherence to diabetes self-management. They also emphasized that during the early stage of the disease, diabetic participants tend to be more committed to their disease, but eventually, their commitment to self-management does not last long since they adapt the burden and deterioration continues.

Conclusion

Based on the results of this study, it was concluded that compared to client education alone, client education with telephone follow-up is more effective in increasing the adherence level to self-management in terms of blood glucose monitoring-practices, fasting blood glucose, medication management, and foot care practices among diabetics. Female diabetics, who are younger and diagnosed to have diabetes for less than five years and below are more adherent to self-management in terms of blood glucose monitoring practices, fasting blood glucose, medication management, and foot care practices. However, educational attainment does not affect adherence to self-management.

Recommendations

The following recommendations were made based on the results of the study:

1. Conduct the study to other rural communities in the country and compile these results together with the results from other similar studies around the country and analyze whether this program will have similar effects in other places
2. Conduct a follow-up study to determine the thoughts, opinion, and experiences of diabetic patients on client education with telephone follow-up.
3. Conduct similar study to a broader population

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Abstract

The mentally ill are viewed as dangerous, unpredictable, and bizarre individual, which brings about fear to individuals including health professionals. This opportunity of care is very challenging because of the fear attached to it. Professional care providers suffer from common fears and apprehension upon contact with a mentally ill patient. Professional stigma, which refers to the nursing students' fears towards exposure to mentally ill patients, was explored in this study. The study utilized a phenomenological research design. Participants were chosen through random sampling specifically the fish bowl technique. Semi-structured interviews were conducted among 10 nursing students from a university in Cavite and triangulation of the data using interviews with clinical instructors and blockmates was employed. Thematic analysis was done using Colaizzi's approach. Findings showed that regarding the nursing student's view on mental illness the themes that emerged was that the mentally ill patient was viewed as an individual with low coping mechanism. The nursing student's also felt some compassion, fear and confusion towards the mentally ill patients. As to the fears of the nursing student's before their clinical exposure, the identified themes were fear of physical harm and violence, fear of inadequacy and the fear of emotional contagion. Based on the findings of the study, it was recommended that schools of nursing which expose their students in the mental health hospital must include briefing and debriefing of students. Clinical instructors should orient nursing students prior to exposure to the mental ward to desensitize them. In addition, emphasis on the importance of increasing awareness on how stigma affects society and the mentally ill must be given importance in order to provide efficient nursing care.

Keywords: *stigma, mentally ill, mental hospital, mental illness*

Mental health is defined by the World Health Organization [WHO] (2014) as a state of well-being wherein every individual realizes his or her own potential. This statement means that a person with good mental health can cope with the normal stresses of life, can work productively and fruitfully, and can make a contribution to his or her community. Further, WHO mentioned that any condition that is tangential to the definition above is classified then as mentally ill. Oftentimes, the society view mentally ill patients as dangerous, unpredictable, and strange, thus, arouse the fear towards mentally ill individual. This is supported by early studies as mentioned by Ahmedani (2011), who revealed the negative perceptions of majority towards mental illness. This, oftentimes, is being looked at as stigma by people.

Unbeknown to many, professionals in the health section also has the stigma towards mentally ill patients and that creates a barrier to provide

optimal care for them. Sirey, et al. (as cited in Ahmedani, 2011) mentioned that it is important to understand the phenomenon of stigma and negative attitudes toward mental illness among mental health professionals who are responsible for providing care to individuals with mental illness. Further, U.S. Surgeon General and the WHO (as cited in Ahmedani, 2011) stated that stigma is a pivotal barrier to a successful treatment engagement as it may hinder those who are mentally ill to continue the care due to their fear of being stigmatized by the society.

However, to the best of authors' knowledge, there is no sufficient report found regarding the stigma towards exposure to mentally ill by student nurses. The paucity of literature exploring the fear upon mental hospital exposure was discovered, hence the exploration was done so that fears commonly experienced by students will be addressed

and that nursing care provided to the clients will be enhanced. Although the quality and effectiveness of mental health treatment and services have improved over the past 50 years, therapeutic revolutions in psychiatry have not yet been able to reduce stigma, thus, reducing stigma of professionals specifically the nursing students towards the mentally ill patients.

The purpose of this study was to determine the stigma associated with mental hospital exposure of nursing students. Specifically, the study sought to answer the following research questions:

- 1) How do the nursing student's view a mentally ill patient?
- 2) What are the fears of student's before clinical exposure to the mental hospital?

Methodology

This study utilized the qualitative phenomenological research design to identify the common fears among 10 nursing students from a university in Silang, Cavite prior to the exposure to a mentally ill client. By imploring qualitative modes of inquiry, the study intends to illuminate the in-depth outlook, thought processes, and reactions of the students on their stigma before exposure to the mental ward. The researchers identified questions that uncovered the fears of the participants. Triangulation of the data using the clinical instructor and block mates was employed and thematic analysis was done using the Colaizzi's approach.

Data from this study include 10 officially enrolled third year nursing students for the academic year 2017-2018. Participants were chosen randomly by fish bowl technique. Names of the students were placed in a glass and the researchers picked the name of the participants. After individually identifying the participants, they were approached and asked if they are willing to participate. The purpose of the study was discussed and informed consent signifying their approval of participation was given. Participants were then invited inside the classroom and preliminary interview was started. Further, the participants were interviewed and a recorder was used to confirm the encoding of the data extracted.

A semi-structured interview questionnaire guide containing questions reflecting on the fears or stigma on mentally ill individual. The participants were interviewed and an audio recording was in

place. An audio recording was utilized to make sure that no statements or important data were missed in the process. The instrument was submitted to seven panel of experts for content validation.

After the approval of the study, the researchers did the random sampling by fish bowl technique. Upon identification of the possible participant, the researchers approached the participant to notify that they were chosen to be part of the research. After the participants agreed on the interview, they were informed of the purpose of the study and consent was given to sign approving their participation in the study which includes the audio recording of the responses. The researchers asked the participants about their concept of mental illness and what are the fears on mental hospital exposure.

To create an environment which is comfortable to the participants, the researchers commenced each interview by asking about their demographic profile followed by the explanation regarding the purpose and objectives of the study. After the preliminary activities, the participants were asked the questions prepared. After the interview, the audio recording was retrieved and the researchers ensured the confidentiality of the audio recording. The researchers transcribed the responses from the interviews into verbatim statements. Responses that were recorded were compared with the transcribed responses to ensure that no possible information was missed.

All the data collected were analyzed using the Colaizzi's approach to analysis of data. The data collected were carefully studied according to the formulation of themes.

Results and Discussion

Nursing Student's View of the Mentally-Ill Patient

Low coping mechanism. The participants viewed the mentally ill as a person with low coping mechanism. They are observed to have difficulty coping with the stressors that consequently threaten their mental health. According to the Mental Health America (2018), mental illness is considered a disease which causes mild to severe derangement in thought and/or behavior, which results to an inability to cope with life's ordinary demands and routines. However, this contradicts the view of Rauch

(2015) who stated that one of the ten misleading assumptions about mental illness is that people with mental illness are at fault because they don't have enough willpower to change. Further, Rauch (2015) mentioned that "blaming someone for struggling with depression is like telling a woman with breast cancer she is dying because she doesn't want to live badly enough."

Mental illness, according to Ravenscraft (2015), is by their very nature, disruptive in one's life; its symptoms can be manifested differently from each person. The result of the study showed that mental illness is considered a state wherein your health is being disturbed by various factors and one of which is quite familiar: stressors. Over time, our body tends to breakdown when exposed to constant strain from routine stress, problems such as heart disease, diabetes and other illness including mental disorders (National Institute of Mental Health, 2018).

Mentally ill patients act differently than those who are normal, even going as far as deducing them as, "crazy" or "insane" as stated by a participant in this study that mental illness means that these are cases among people with physical behavior problem that is also prominent. In congruence to the perspective of the participants, most of society's outlook of mental illness is not just being "crazy" or "insane". Mental illness is a broad and partially unexplored subject by the majority of the society and unbeknown to many, it includes the health care professionals as well. It is a disturbance of behavior, feeling, or thought according to the Mental Health America (2018).

Rauch (2015) would disagree to one of the participant's statement, "*Kasi mentally ill na tao they act differently sa normal na tao*" (A Mentally ill individual act differently than an normal person); but although they act differently in the eyes of the society, it is only an assumption that they are fundamentally different type of human, as if having mental illness meant they were different from birth (Rauch, 2015).

Anna Lente, a brave individual who is subjected to mental illness, particularly mania and multiple personality disorder, has openly shared her story on social media. She stated that every day she struggles with it, however, it is not a crisis for her. It is something rather that annoys her but she

claimed that she has a good coping skills and that she is able to manage it well for she is still capable of living her daily life without much trouble despite her mental problems. Her claims also stated that she is a common person who wants to be treated like one, and that she still wants to be seen as 'normal' despite her illness. (Lente, 2018).

Result showed that when participants are asked to define mental illness, they stated that it is a disease that is still treatable despite the stigma it caused the society. "*Kaya naman, kasi akala ko dati pag baliw ka wala ka ng pag-asa eh. Pero meron pala kasi nung naexpose kami may mga patient kami for discharge nagulat ako na pwede pa pala*" (So, because I thought you were crazy when you did not have hope. But that's because we've had our patients for discharge surprised me) as stated by the one participant.

With this statement, the researchers realized how crucial it is for the society to be aware that mental illness is nothing to be ashamed of and most importantly, it is a disease that is treatable with proper and effective management. Studies have been reviewed by a physician stating that mental illness is a medical problem too just like heart disease or diabetes, and it is as a matter of fact, treatable. Despite having mental illness, majority of individuals still remain to function in their daily lives (Parekh, 2015).

Another participant stated, "*Ano din kasi na parang may mga iba't ibang therapy, ngayon ko lang nalaman na meron pala nun music, art and bibliotherapy.*" (What's more, as if there were different therapies, now I know that there are music, art and bibliotherapy)

There has been a study done to prevent the increasing rate of the development of mental illness among young adolescents. With the use of bibliotherapy, they will have an awareness that others are facing similar problems too and that alternative solutions to problems exist. There are many other benefits of the use of this therapy. In a case study done, a second grader who received bibliotherapy treatment indicated a noteworthy difference in behavior and even going as far as having a dramatic shift in the student's ability to function in the classroom (Curry, 2014). While certain genres of music, on the other hand, have shown tremendous evidence in soothing one's distress. Today, multiple

studies are done where music is being utilized in regaining inner peace, emphasizing the songs that offer people solace. One study focused on incorporating music into management of psychiatric disorders (Croft, 2016).

Just like two of the numerous therapies aforementioned, health advocates around the world have begun providing significant progress of various treatments to somehow prevent, if not reduce, the alarming increased rate of mental illness across the globe (Croft, 2016). Result showed that mental illness is defined as a need to be considered of great significance to the well-being of an individual. In an article in the World Health Organization of South-East Asia (2018), the magnitude and burdens of the problem have been laid out. Some are as follows: as many as 450 million people suffer from a mental disorder; nearly one million people commit suicide every year. It showed that one in four families has at least one member with a mental disorder; and lastly, those suffering from mental illnesses are also victims of violations of human rights, stigma and discrimination both in and out of psychiatric institutions. This implied the importance of dedicating notable scrutiny and response to the call of those affected by it, by further developing treatments and therapies and improving the existing ones and more importantly, reducing and eventually eliminating the society's stigma towards mental (WHO, 2003).

Three themes emerged when participants were asked of their feelings towards people with mental illness. These are compassion, fear, and confusion.

Compassion. The Participants viewed the mentally ill patients as pitiful. The statements below were made to reflect the compassion felt by the nursing student's.

Participant #1

"Nakakaawa, ewan ko nung una ko silang nakita naawa lang ako kasi diba kanya kanyang story naman kasi parang natigil yung life nila, nawala sila sa reality. Naging Miserable buhay nila."

(I feel pity towards them, the first time i saw them i really feel that they are very pitiful. We have different stories to tell but for them, it just suddenly stopped

and then they begin to feel they are out of reality. Their lifes suddenly became miserable)

Participant #2

"Naawa ako sakanila kasi di na nila alam ang reality."

(I feel some pity for them because they don't know what is reality.)

Participant #3

"Like nakakaawa kasi sila na parang mga dukha. You know like they could have been like us instead of being in that position."

(I feel some pity for them because they are like peasants. They could have been like us but instead they are in that position.)

Participant #4

"Nakakalungkot lang. Nasasktan din ako kasi they are those people na hindi na kinaya. Hindi naka let go. Parang natalo sila sa battle of life."

(I feel sad. It hurts me because they are the ones who were not able to carry on. They were not able to let go. I feel like they were defeated in the battle of life.)

According to Corrigan, et al., (2015), they sympathize with them because they do not know how to discern reality anymore. Reasonable reactions to mental illness include sadness and sympathy. Research suggests that educational programs focusing on biological causes may increase pity, or sympathy, for people with mental illness. Bowie (2017) said that by trying to be more compassionate to others, one can improve mental wellbeing and self-kindness and also it can help reduce the stigma that is often associated with mental illness.

A study supported the statements above when they justified that people suffering from mental illness are but victims and that in fact they have no control over it nor are they to blame for it (Desmarais, et al., 2014). In an article called Investing in Mental Health (World Health Organization, 2003), supported the claim of the participants when many psychiatric institutions and general hospitals continue to utilize caged beds

routinely to restrain patients with mental retardation and mental disorders. This type of restraint is often used when healthcare professionals or training are inadequate, and sometimes they even use it as a form of punishment. People who undergo its usage described the experience as being “emotionally devastating, frightening, humiliating, degrading and disempowering”. A study attested to the claims of the participants when they stated that it is reasonable for the society to respond with sympathy to mental illness, especially when its symptoms and disabilities challenge happiness and hope (Corrigan, 2016).

Fear. Fear is the second theme that emerged from the study. The study in the year 1998 reviewed by Grohol in 2015, disagree to most of the stigma of the participants as well as the majority of our society when he quoted from the Archives of General Psychiatry:

“...patients discharged from psychiatric facilities who did not abuse alcohol and illegal drugs had a rate of violence no different than that of their neighbors in the community.”

Participant #7

“Nakakatakot, Parang, ayaw ko lumapit sa kanila kaso sa nursing nga kailangan makipag communicate.”

(It is scary, it is as if i do not like to go near them but because you are in nursing i felt the need to communicate with them)

Participant #10

“Honestly before, pag mentally ill. Oh yeah she’s crazy, nakakatakot.”

(Honestly, before, whenever i met a mentally ill patient, i would say she’s crazy and scary.)

Lundberg, Hansson, Wentz, Björkman as cited in Ahmedani (2011) mentioned that the general public perceives those with mental disorders as frightening, unpredictable, and strange. These fear and discomfort arise as a result of the social cues attributed to individuals. Further, Corrigan (2019) supports the idea that social cues can be evidenced by psychiatric symptoms, awkward physical appearance or social-skills, and through

labels. However, one must realize that people with mental illness are not as frightening as they could be. According to Mental Health Gov. (2017), most people who have mental illness are actually not violent and there is only 3%–5% of violent acts which can be attributed to individuals living with a serious mental illness. This statement was also supported by Swanson, McGinty, Fazel and Mays (2014) in their epidemiologic studies which showed that the large majority of people with serious mental illnesses are never violent.

Confusion. The study showed that the participants were confused on how they should feel towards a person with mental illness.

Participant #4

“Di ko alam. Nakakalito kasi it is more on sa loob nila kasi di mo naman masasabi na may mental illness ang isang tao unless di siya magpakita ng symptoms.”

(I don’t know. It is confusing because it is more like it is deep inside them and you cant tell if they are mentally ill unless they show some symptoms.)

Participant #9

“It’s hard to say. I can hide things, para bang I can cover it up with my facial expression na okay ako pero deep inside I’m going through something. It’s hard to picture out the patient having mental illness. I cannot say sa isang tingin lang na masabi na mentally ill sya.”

(It’s hard to say. I can hide things, its just like i can cover it up with my facial expression that I am okay but deep inside I am going through something. It’s hard to picture out the patient having mental illness. I cannot say in one look that he/she is mentally ill.)

According to the National Alliance on Mental Health (2018), it is overwhelming and emotionally draining for an individual who understands and provides support for someone suffering from a mental illness.

Nursing Student’s Fear Before Exposure in the Mental Health Hospital

Fear of Physical Harm and Violence. Fear

of physical harm and violence came out as the most common fear felt by the nursing student's before their mental health exposure.

Participant #3

"Bigla na lang may hahablot sa kinabuhay ko or bigla na lang may sasakit sa kinabuhay ko. Kasi parang they can do whatever they want to do physical harm tapos foul words baka sigaw sigawan nila ako."

(Suddenly there is someone who would grab me and hurt me or spit at me. It's like they can do whatever they want to do physical harm and then utter foul words or worst they would shout at me.)

Participant #4

"Takot ako kasi what if someone ends up like dragging me or something"

(I'm scared because what if someone would end up like dragging me or something.)

Participant #6

"Fear ko dun yung mga tao na hindi maayos magisip na pwede manakit"

(My fear would be that someone who is mentally ill would hurt you.)

Participant #7

"Baka mangyari ang physical assault."

(Physical assault might happen)

Participant #8

"Nakakatakot kasi behavior nila na pabago bago like for now tahimik sila tas biglang parang mag wawala ang mananakit"

(Their behavior is scary because they are unpredictable. They are quite for a time and then suddenly they would burst out and then would hurt you.)

According to Crisp, Gelder, Rix, Meltzer et al., Bryne and Heginbotham (as cited in Davey, 2013) stigmatizing attitude towards mental illness is widespread. The statement mentioned above should dismiss the thought that mentally ill patients, unless

diagnosed with severity, are not inclined to violence should they not suffer from substance abuse likewise. Because substance abuse raise the rate of violence both among discharged patients and among non-patients. However, Grohol (2015) stated as well that people suffering from both need not be outright evaded, rather he meant for the people to be wary of them, taking reasonable precautions. Further, Stuart (2003) mentioned that having mental disorder did not inherently make someone violent, nor did being violent indicate that someone had a mental illness.

Ravenscraft (2015) further mentioned that people suffering from mental illness do not inherently make them violent, nor did being violent indicate that they are subjected to mental illness. Therefore, the society should instead accept them for who they are, because normal people experience tiresome and demanding times, no one is an exception.

Fear of Inadequacy. The Fear of inadequacy results when nursing student's feel like they are not capable to take care of a mentally ill individual considering that they are just student nurses. Result showed that participants claimed to have this fear for themselves, that they may not provide or deliver the quality care the clients' need.

Participant #2

"Hindi ko mabigay yung care naka kailagan nila kasi sa palagay ko, baka kulang pa knowledge ko"

(I won't be able to give the necessary care they need because i feel that my knowledge is still not enough.)

Participant #3

"Parang takot ako kasi what if hindi tama yung ginawa ko. What if my care is not effective"

(I feel scared because what if i was not able to do the right thing. What if my care is not effective.)

Participant #4

"What if I can't be of help and change, because of my fear"

Participant #6

"Like what if I wouldn't be able to take care of my patient"

Participant #7

“What if I can’t be of help and change, because of my fears”

This feeling of inadequacy roots from their stigma as well. Because if stigma is taken away from the equation, these nursing students would have a more controlled and phlegmatic interaction which would consequently make them feel satisfied in their own. Inadequate skills and training seem to be associated with stigmatization that leads to feelings of anxiety or fear and a desire for avoidance and social/clinical distance among practitioners, which can negatively impact patient-provider interactions and quality of care. Next is that it can lead to less effective treatment and poorer outcomes (Knaak, Mantler, & Szeto, 2017).

Fear of Emotional Contagion. Emotional contagion is believed to be the possibility that one can take on the moods and attitudes of those around. It is believed that while people generally don’t act exactly identical to those around them, moods of surrounding people can rub off on an individual (Desai, 2018). It has the adaptive function of facilitating high-quality connections through emotional attunement (Petitta, Jiang, Lixin & Hartel, 2017). Further, Wharton Executive Education (2011) agreed to the statement by saying that when people work in groups, they can catch one another’s emotions like viruses. However, Petitta, Jiang, Lixin and Hartel (2017) believed that not all emotional exchange contributes to the emotional contagion experience.

Participant #1

“Syempre baka maiwan ako kasi, ano e before like syempre diba kasi before we have to let go like dapat makilala yung sarili mo kasi syempre baka hindi ko pa pala kilala yung sarili ko talaga na gamun. Mamaya mag breakdown ako dun yun baka hindi ko alam I have also na meron din ako nun. Baka maiwan yun or meron din ako nun”

(Of course I am scared, I might be left behind. We also have to let go and be familiar of ourselves because if not then that’s it. I might breakdown because I feel I might have that feeling. So I might be left behind or I might have the same feeling with them.)

Participant #3

““Natakot ako baka maiwan ako dun hahaha de joke. Legit kuya natakot talaga ako kasi baka maiwan ako dun kasi parang feel ko naman parang problema. Paano ba maging qualified para hindi maiwan baka mamaya may mga experience pala ako from the past na will haunt me down pag nangdun nap ag tinanong tanong nako dun. Baka may isang factor na maiwan ako dun.”

(I am scared that I might be left behind. That’s real kuya I feel really scared that I might be left behind because I feel I have a problem. How do I become qualified to not be left behind? What if I have some experiences from my past that will haunt me down especially when I am questioned. I might have that factor that would cause me to be left behind.)

Implication

Nurses or any health care professionals must realize that persons with mental illness are also human beings and that they too experience stigma. The understanding of this disorder is encouraged and that these people are less harmful as what most people think of.

Conclusion

The data extracted from the interview revealed that even nursing students, who are the future healthcare professionals, have been influenced by the stigma towards mental illness. There are three themes that emerged regarding how nursing student’s view the mentally ill patient. The themes were the feeling of compassion, fear and confusion. Regarding the identified fears of nursing student’s before clinical exposure to the mental health hospital the themes were fear of physical harm or violence, fear of inadequacy, and fear of emotional contagion. Literature says that there are no substantial evidences that support the idea that mental illness have any correlation with violence. Moreover, the feeling of inadequacy of the participants would come to an end if the actions they execute to provide quality care that is satisfactory. This can be verified by the clients’ minor but significant improvements and the commendation from the clinical instructor. Lastly, mental illness is not transferable or ‘nakakahawa’ through interaction or by any means at all.

Recommendation

The researchers would like to recommend the clinical instructors to give utmost importance in providing an in-depth clarification on the fact that there is, under any circumstances, no benefits in stigmatization. In addition, prior exposure, inessential fears of the students must be given light with proper orientation by desensitization of their fears in order to eliminate it— as this stigma only creates a pointless barrier in providing quality care to the mentally ill.

The researchers would like to recommend every health care advocates to be persistent and zealous in reducing if not diminishing the stigma completely. Their success would give a remarkable outcome as evidenced by the peoples' expressive admittance and acceptance of their existing condition.

The researchers would like to recommend the society to broaden their understanding with the truth. Refrain from extracting truth only from social media and other sources that provide inadequate evidence. Rather, read articles, journals, books— educate yourselves. Eliminate your fears by interacting with them, seeing the world through their perspectives, and be the one to encourage them to speak about the condition that has been evaded by most of the society for ages.

Lastly, the researchers would like to advise the future research groups who are eager to take on the road of studying Mental Illness in its raw form, to focus not only on the objective data gathered but also account the subjective data of those affected by it. It would construct an extensive information that would produce phenomenal, and even unexpected results.

Limitations

Limitations of the study included the weaknesses of the study beyond the control of the researchers. This included the possibility that some participants were not very expressive of their feelings towards mental hospital exposure. It was also delimited to the interviewers' expertise in the exploration of the participants' thoughts and feelings which limits the responses. Moreover, other factors like culture and the family subculture may also influence the upbringing of the participants.

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Abstract

The advancement in social media use is undeniable and there are many contradictory views on the effects of frequent use. The Philippines was the top among other countries exposed to social media, with 83.1% Filipinos engaged to social networking sites. Also, Filipinos were considered the top users in sharing photos and videos. Thus, this study examined if body image mediates the relationship of social media use and self-esteem among 101 Filipino college students who were conveniently chosen from different departments of a university. A descriptive design using an adopted questionnaire and a constructed one from literature were employed to gather the data. Structural Equation Modeling (SEM) was used to generate a model for college student's self-esteem. The respondents spent an average of 5.06 hours per day in which majority are constantly connected. They have a very good body image as well as high self-esteem. Their body image is found to be significantly related to their self-esteem. However, the daily time spent and frequency of visit to social media negatively relate to their body image and together with their age and gender, do not affect their self-esteem. SEM revealed that the relationship between social media as to daily time spent and self-esteem is partially mediated by body image. Social media has to affect the body image of the Filipino college students first before it can affect their self-esteem.

Keywords: *social media use, body image of college students, mediation of body image*

The advancement in social media use is undeniable and there are many contradictory views on the effects of frequent use. Social media sites like Facebook and Twitter have become a huge part of most teens' lives (Malti, Keller, Gummerum, & Buchman, 2012). Adolescent girls are more likely to develop body image issues because of comparing themselves to social norms of beauty as portrayed in the social media representations (McLean, Paxton & Wertheim, 2016).

Voelker, Reel, and Greenleaf (2015) mentioned that adolescence represents a pivotal stage in the development of positive or negative body image. Many influences exist during the teen years including transitions (e.g. puberty) that affect one's body shape, weight status and appearance. Salient influences on body image include the media, which can target adolescents, and peers who help shape beliefs about perceived body ideal.

Body image is something young adults have struggled with and it would be difficult to not struggle with it considering they live in an era of a media-heavy society (Harrison & Hefner, 2014).

Exposure to edited Instagram photos directly led to lower self-esteem as well as lower body image as concluded by Ashikali, Dittmar and Ayers (2014) in their study. In the digital shift, the Philippines has taken the global lead in at least one measure: time spent on social media, as reported by social media management platform Hootsuite and United Kingdom-based consultancy We Are Social Ltd (Camus, 2017). Filipinos spent an average of 4 hours and 17 minutes per day on social media sites such as Facebook, Snapchat and Twitter. The Philippines, so far, has a social media penetration rate of 58%, higher than the average of 47 % in Southeast Asia (Camus, 2017). Filipinos are not just consumers but also active producers and sharers of content. Fifty-four percent have "checked-in" or tagged their location. Fifty-nine percent have posted a news story or article and 71 % have posted videos or links to videos within Facebook (Acar, 2015).

With that, the researchers want to find out if social media can influence the self-esteem of college students from a country tagged as top user of social media, and if the body image can mediate it.

Methodology

Research Design

In determining the influence of social media to self-esteem a descriptive design was employed in gathering the data through survey after they voluntarily gave their consent. To analyze the gathered data, descriptive statistics, correlations, and multiple regression analysis test of mediation using Structure Equation Modeling (SEM) were used to generate a model. SEM, a multivariate statistical analysis technique which is the combination of factor analysis and multiple regression analysis, is used to analyze the structural relationship between measured variables and latent constructs. This method is preferred because it estimates the interaction effects of latent variable in the multiple-indicator approach (Kline, 2011).

Population and Sampling

The respondents in this study were 100 Filipino college students from ages 18 to 20 years old who were chosen through convenient sampling, and are active in using social media. The data for this study were collected and examined on only one occasion with the intended participants.

Instrumentation

An instrument used in gathering the data contained personal information of the respondents with an attached consent form signed by the respondents to show their permission to join the study. The social media is measured by daily time spent scored as minutes to hours of use per day, application most used, and frequency of time spent as to the number of times per day. In measuring body image an adapted and modified questionnaire from the body-esteem scale by Franzoi and Shields (1984) and Self-Esteem questionnaire was adapted from Rosenberg Self-esteem scale. Both body image and self-esteem items 1, 2, 4, and 6 were measured with a Likert's scale (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree, and items 3, 5, 8, 9, and 10 with (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) Strongly Agree. The mean scores for both body image and self-esteem were verbally interpreted as very low to very high. The questionnaire constructed from

literatures for social media and body image were submitted for expert validation, pilot study and reliability test.

Results and Discussions

Social Media Exposure of the Respondents

Social media exposure of the respondents was measured through daily time spent, frequency of social media use, and application most used by college students.

Daily time spent. The respondents' social media exposure as to daily time spent showed that out of a total of 100 college students, there are 11 (10.9%) who spend 2 hours and there are 10 (9.9%) who spend 5 hours.

Table 1
Social Media Exposure of the Respondents: Daily Time Spent

		f	f z	f flz	
Daily Time Spent	100	.10	18.30	5.06	3.56
Valid N (listwise)	100	Mins	Hrs		

It can be comprehended that respondents spend a minimum of .10 minutes to a maximum of 18 hours and 30 minutes on social media daily, where the mean for its duration is 5.06. The typical individual is remarkably spending around 116 minutes on social media daily. Doubly, time spent on social is only expected to upsurge as raised area progressed (Asano, 2017).

Application most used. In terms of application most used, 37 (36.6%) use a combination of two or more applications, 26 (25.7 %), use all of the applications from the list, and 22 (21.8%) use Facebook.

Table 2

Social Media Exposure of the Respondent: Application Most Used				Social Media and Body Image of the Respondents			
	Frequency	Valid %	Cumulative Percent	Social Media	Body Image <i>p</i> correlation	<i>p</i> value	Verbal Interpretation
Vy ff	BB	BAH	BAH	Daily Time Spent	-.350**	.000	Significant
Y yThy	G	F8	CG	Frequency of Visit	-.305**	.002	Significant
k ff	E	E8	BF8G	**. Correlation is significant at the 0.01 level (2-tailed).			
e ff	D	D8	A : 8	Body Image and Self- Esteem of the Respondents			
S z y	CG	CF8	IF8	Based on the results shown on the Table 4, body image obtained a correlation coefficient of .459 with self-esteem and a p-value of .001. The attained p-value is significant at .01 level, so it pointed to the fact that there is a significant relationship between the respondent's body image and their own self-esteem. The relationship is positive. Therefore, it is inferred that the higher one reputed his or her body image, the better his or her self-esteem is.			
ffB ff							
Q ffi ff	BF	BE8G	IF8				
yz ff							
k y	A A	A : 8					

Furthermore, it showed that the number of the highest respondents which was 32 out of 100 with a percentage of 31.7 is constantly connected to social media and 4 % or 4 respondents visit the application most used at least seven to eight times a day.

Degree of Body Image and Level of Self-Esteem of the Respondents

The respondents have a *very good* degree of body image with a mean of 3.19. Consequently, it was shown that the respondents have a high degree of self-esteem with a mean of 3.57.

Social Media and Body Image of the Respondents

The result depicted that there is a significant relationship between the respondents' daily time spending in social media and body image. The negative correlation indicated that as the number of time spent in social media increase, the respondents' perception of their body image decrease.

The frequency of visiting social media has a significant relationship to the body image of the respondents. However, the correlation is negative. Therefore, the more frequent the respondents visited social media, the lower their body image is.

Table 3

Table 4

Body Image and Self- Esteem of the Respondents

		Self – Esteem	Verbal Interpretation
Body Image	Pearson Correlation Sig. (2 – tailed) N	.459** .001 100	Significant

**. Correlation is significant at the 0.01 level (2-tailed).

Social media and Self-Esteem of the Respondents

Based on the results shown in Table5, the daily time spent on social media obtained a correlation coefficient of -.150 with self-esteem and a *p*-value of .134. The acquired *p*-value is not significant or similar at .01 level so it showed that the daily time spent on social media is related to the self-esteem of the respondents.

Table 5 further shows that the frequency of visits to social media obtained a correlation coefficient of -.123 with self-esteem and a *p*-value of .222, which is not significant at .01 level. The result implied that the respondents' frequency of visits to social media does not significantly affect their self-esteem in terms of the frequency of visits was comparable to their self-esteem.

Table 5

Social Media and Self-Esteem of the Respondents

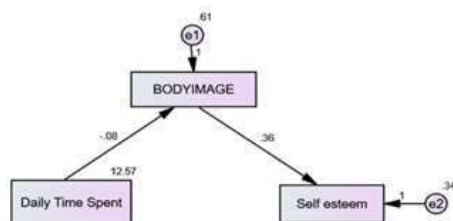
Social Media	Body Image		Verbal Interpretation
	p correlation	p value	
Daily Time Spent	-.150	.134	Not Significant
Frequency of Visit	-.123	.222	Not Significant

** . Correlation is significant at the 0.01 level (2-tailed).

This result was contradicting with the study conducted by Pineiro (2016). According to Pineiro (2016), the higher usage of social media would correlate with lower levels of self-esteem in undergraduate students.

The Relationship Between Social Media and Self-Esteem as Mediated by Body Image

The determinants of self-esteem of college students were ascertained by using SEM through Analysis of Moment Structures (AMOS) Software. The final model generated by AMOS software is reflected in Figure 2.



ChiSquare=.017; df=1; p=.897; RMSEA=.000; GFI=1.000; CFI=1.000;

Figure 2. The Final Model on Social Media and Self Esteem as Mediated by Body Image.

The model in Figure 2 yielded one determinant of self-esteem of college students. As directed by the arrows with their corresponding values, it showed that daily time spent on social media and body image emerged to be the combined determinants. They account for a total of .34 of the magnitude of variance in self-esteem which could be explained by the effect of daily time spent and body image. The daily time spent related to the body image accounts for a total of .61 which means that 61% of the magnitude of variance in the body image could be explained by the effect of daily time spent on social media. The implications of the line in Figure 2 are discussed as follows. The result

implied that social media, as to daily time spent, do not directly affect the self-esteem of the respondents, but through their body image. Social media affected their body image first before self-esteem.

Social media exposure: daily time spent.

Daily time spent is directly related to the body image with a regression weight of -.08. It implied that an increase in daily time spent in social media constantly decrease the body image of college students by 8% or it meant that the college students who have spent a longer time every day in social media has poorer body image. These results correlated with the findings of Sherman (2016) wherein it was found that participants who are in the top quartile of social media users in terms of volume (higher than about two hours per day) and frequency (higher than about 60 visits per week) are more than twice as likely to develop negative body image issues than those in the bottom quartile (Sherman, 2016).

Daily time spent is indirectly related to self-esteem (-.08 X .36 = .029). The total effects of daily time spent that relate to self-esteem is computed by adding the direct and indirect effects of the variable[e.g. direct effect + (a + b) = total effects, (-.08 + .029 = .109)] that meant on increase in daily time spent decrease the self-esteem by 10.9 % if mediated by body image of the respondents. This result affirmed the Maslow's Hierarchy of needs postulating that there are essential needs that need to be met first (psychologic needs and safety), before more complex needs can be met (such as belongingness and self-esteem).

Differences in the Social Media and Body Image of the Respondents in terms of Age and Gender

Age. The respondents who are 18 years old have an average of 5.47 hours of time spent in social media per day, 19 years old have 4.98 hours, and 20 years old have 4.74 hours. The achieved F value of .312 and p-value of .733 are not significant at 0.05 level which implied that the time they spent in social media do not make any remarkable difference in the body image of the respondents.

Table 6

Difference in the Social Media and Body Image in terms of Age

	Age	M	S	F(2.8)	p	Verbal Interpretation
Daily Time	18	5.47	4.0	.312	.733	Not Significant
	19	4.98	3.59			
	20	4.74	3.07			
Body Image	18	3.11	.94	.432	.534	Not Significant
	19	3.12	.82			
	20	3.39	.77			

This result corresponded to the statistics where 34% users of Instagram are from ages 25 to 34 years old. Men between the ages of 18 and 24 years were considered to be the principal user group in a January 2017 survey from worldwide Facebook, and the second largest group consisted of men between the ages of 25 and 34 years (Acar, 2015).

Gender. Table 7 shows that male respondents have an average of 4.90 hours of time spent on social media per day, while female respondents have spent 5.13 hours. The daily time spent acquired an f-value of -.297 and a p-value of .767 which are not significant at 0.05 level. The outcome indicated that the time the respondents spent on social media everyday does not make any significant difference in their body image.

Table 7
Difference in the Social Media and Body Image in Terms of Gender

	Gender	M	S	F(2.8)	p	Verbal Interpretation
Daily Time	Male	4.90	4.02	-.297	.767	Not Significant
	Female	5.13	3.35	-.279	.781	
Body Image	Male	3.43	.93	2086	.40	Not Significant
	Female	3.07	.75	1916	.061	

The result was not congruent to the study done by Perrin, 2015. It declared that females were more likely to use social networking sites than males. However, since 2014, these variances have been uncertain. Nowadays, 68% of all female users operate social media, in comparison with 62% of their male counterparts (Perrin, 2015). In attendance,

there has been many snowballing discussions on whether bodies being portrayed by women in the media promote danger which is dynamic to negative body image for both sexes; predominantly in women. In western world, images of unachievable body standards fill up TV advertisements, magazines, movies and social media sites, which greatly reflect such to be the ideal body (Cory & Burns, 2007).

Conclusions and Recommendations

Based on the outcomes of the study, the researchers concluded that the Filipino college students spend an average of 5.06 hours per day on social media using Facebook, Instagram, Twitter, and others. They show a very good body image and a high self-esteem, but the more frequent they visited social media and the more time spent in it, the lower their body image becomes. Their age and gender does not affect their self-esteem, but rather the higher they regarded their body image the better is their self-esteem. Structural Equation Modelling revealed that the relationship between social media as to daily time spent and self-esteem is partially mediated by body image. Social media has to affect the body image of Filipino college students first before it can affect their self-esteem. The result confirmed that there are needs in the Maslow's Hierarchy that has to be addressed first like body image, before more complex needs can be met like self-esteem.

It is then recommended that there should be an increasing public awareness of the negative effect of social media to one's body image and body image to self-esteem and should be prioritized most especially among teenagers and young adults. Parents should keep a regular check on their children and set limit on the time and networking sites to use. Campaigns to raise more awareness to young adults regarding the negative repercussions of social networking sites is recommended. Further, seminars in schools about the negative effects of social media and on how to equip college students on how to use it wisely are encouraged. Future research should assess more dimensions affected by social media use to a more diverse and larger sample size.

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Glory V. Pohan, Febe Marshelle K. Wangania, Uriel L. Zarsaga

Abstract

The study analyzed the effectiveness of commercially available denture cleaners versus lemon and calamansi as complete denture cleaning agent. Specifically, to test the plaque index score of each denture before and after using commercially available denture cleaners and citrus cleaners at different time intervals. Convenience sampling method was used in choosing subjects who are complete denture wearers for not more than two years. The number of the complete denture for this study was 30 pairs. The total number of samples was 60 dentures; each denture has 28 set of teeth excluding the 3rd molar. There were 5 solutions used for this study; namely, water, calamansi, lemon, Brand E and Brand P. The 30 dentures were divided into five solutions, so each solution of denture cleaner got six pairs of dentures for the experiment. Each set of complete denture was assessed twice for the plaque index 'before' and 'after' soaking into the five solutions. The time intervals was monitored using a stopwatch. The dentures were then assessed for plaque indices every 5 minutes, 15 minutes and 30 minutes. Results showed that there is no significant difference in between commercially available denture cleaners and citrus materials for reducing the amount of plaque in complete denture. Citrus materials are just as effective as commercially available denture cleaning agents.

Keywords: *dentures, plaque, citrus, cleaning agents*

Currently, there are many ways to replace a missing tooth. Some of them are removable partial denture, fixed partial denture, complete denture, and even dental implant. Dentures, also known as false teeth, which are prosthetic devices, constructed to replace missing teeth, and are supported by surrounding soft and hard tissue of the oral cavity. Dentures can be either partial or complete; depending on the location of the missing tooth.

Dentures can help patients with mastication as chewing ability is improved by replacing the missing tooth with an artificial tooth or a denture teeth. Second, it helps in aesthetics because the presence of teeth provide a natural facial appearance, and wearing a denture to replace missing teeth provides support for the lips and cheeks and improves the appearance of the patient. Lastly, the presence of dentures can improve pronunciation thus improving self-esteem (McKenna, Finbarr, Hayes, Damata, Moore & Cronin, 2018).

Denture plaque develops from adherence, aggregation and growth of microbes from saliva, oral mucosa and possibly fingers in the absence of adequate denture hygiene, and derives nutrients

from saliva, oral mucosa and the diet (Coulthwaite & Vernan, 2009).

Many people are unaware that false teeth also get coated with plaque. And that plaque can harden just as it would on natural teeth and provide an even more fertile breeding ground for bacteria. To extend the life of dentures and maintenance of good oral health, proper cleaning of both dentures and the mouth is encouraged. Every surface in the oral cavity, natural or synthetic, becomes covered within about 30 minutes with a 0.5-1.5 µ-thick precipitate of salivary glycoprotein and immunoglobulin that is termed pellicle. The pellicle in turn provides a substrate to which oral debris (such as mucin, food particles and desquamated epithelial cells) and microorganisms (bacteria and fungi) readily adhere (Shay, 2000).

The objective of this study was to determine if there was a significant difference in the effectivity of the solutions to remove plaque after a) 5 minutes b) 15 minutes c) 30 minutes of soaking in the following solutions: a) water b) calamansi c) lemon d) Brand E and e) Brand P.

Methodology

Participants

The researchers used the convenience sampling in choosing subjects who are complete denture wearers for two to three years. The subjects of the research were 30 patients having both upper and lower dentures. There was no consideration for the age and gender for the participants. The study was also conducted at the residence of the participants.

Step-by-step Procedure

The total number of denture was 60; each denture has 28 set of teeth excluding the 3rd molar. There were 5 solutions used for the comparison of the denture cleaners. The five solutions were a)water b)calamansi c)lemon and the commercial solutions d) Brand E and e) Brand P. The 30 dentures were assigned into 5 solutions, so that each solution of denture cleaner contained 6 pairs of dentures for the experiment. Each set of complete dentures was assessed twice for the plaque indices 'before' and 'after' soaking. Time intervals were monitored using a stopwatch. The assessment of the plaque indices were done at 5, 15 and 30 minutes.

The Turesky et al. Modified Quigley Hein Plaque Index (TQHPI) for measuring the plaque score of dentures before and after soaking the dentures in the solutions (Paraskevas, Rosema, Versteeg, Timmerman, van der Velden & van der Weijden, 2007). A score of 0 to 5 was assigned to each facial and lingual no restored surface of all the teeth except third molars.

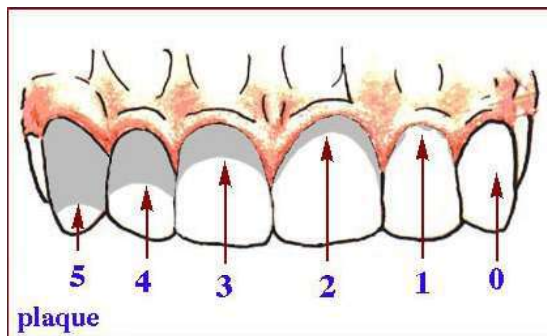


Figure 1. Plaque Scoring Index

Table 1

Rubrics for the Plaque Scoring Index

No.	Criteria
0	No plaque
1	Separate flecks of plaque at the cervical margin of the tooth
2	A thin continuous band of plaque at the cervical margin of the tooth
3	A band of plaque wider than one mm but covering less than one third of the crown of the tooth
4	Plaque covering at least one third but less than two thirds of the crown of the tooth
5	Plaque covering two thirds or more of the crown of the tooth

Computation:

Plaque score= Sum of all Scores/ Total Number of Surfaces Examined

Plaque Staining

A red disclosing solution was used to make the dental plaque visible. Assessment of plaque was made possible by disclosing agents because it provides objective evidence that plaque was removed. Disclosing agents were generally made up of erythrosine dye and manufactured as liquid or tablet. These agents provide an image of the dental plaque by staining the plaque, thus it was used to measure the amount on the teeth (Daniel, Harfst & Wilder, 2008).

Materials

The materials used in this comparative study were the following:

- Dental disclosing solution
- Denture cleaning agents (Brand P, Brand E, lemon, and calamansi)
- Disposable plastic cup
- Basin
- Stopwatch
- Manual Juicer
- Strainer
- Water

Steps in the preparation of Lemon and Calamansi extract

1. Gather the calamansi and lemon and then wash.
2. Measure the mass of the calamansi and lemon fruit crosswise.
3. Slice the fruit and squeeze until the last drop with manual juicer; do not include the pulp and use strainer as needed.
4. Measure the volume of the juice gathered in the measuring cup.
5. Put about 400 ml juice in a container.
6. Add another 400 ml of very warm water in the container.

Eight-hundred ml of combined juice and warm water in the container. This measurement was enough to soak two sets of complete denture.

Steps in the preparation of the commercially available denture cleaning agents

Brand P :

1. Drop one tablet into very warm water to cover denture.
2. Soak the denture for the duration of 5, 15 and 30 minutes.
3. Rinse the denture thoroughly with running water.

Brand E:

1. Drop one tablet into very warm water to cover the denture.
2. Soak the denture for the duration of 5, 15 and 30 minutes.
3. Rinse the denture thoroughly with running water.

Experiment Proper

1. Remove the complete denture from the patient's mouth.
2. Soak the complete denture into disclosing solution for 30 seconds.
3. Check for the plaque index.
4. Soak the complete denture into the following denture cleaners:
 - Brand P- 5,15 and 30 minutes
 - Brand E- 5, 15 and 30 Minutes
 - Citrus materials (calamansi and lemon)- 5,15 and 30minutes
 - Water – 5, 15 and 30 minutes
5. Check for the plaque index

Results and Discussion

The results presented the effectiveness of the commercially available denture cleaner (Brand P and Brand E) and the citrus materials, which are lemon and calamansi in reducing dental plaque in complete denture patients.

Table 2 presents the plaque index scores of the dentures before and after soaking in the five solutions at the following time intervals a) 5 minutes b) 15 minutes and c) 30 minutes.

Table 2

Plaque Index Score Before and After

	Water		Calamansi		Lemon		Brand E		Brand P	
	Before	After	Before	After	Before	After	Before	After	Before	After
5 Minutes	1.28	1.28	1.32	0.5	1.26	0.37	1.53	0.75	1.21	0.42
	1.26	1.26	1.25	0.35	1.21	0.25	1.26	0.57	1.19	0.51
15 Minutes	1.35	1.35	1.17	0.37	1.14	0.37	1.51	0.69	1.28	0.32
	1.53	1.53	1.30	0.28	1.33	0.30	1.57	0.73	1.39	0.32
30 Minutes	1.14	1.14	1.21	0.10	1.33	0.21	1.57	0.58	1.42	0.30
	1.33	1.33	1.21	0.25	1.25	0.14	1.33	0.28	1.57	0.33

The data showed that all solutions except the plain water, which was considered as the control, had a decrease in their plaque index scores. This means that these solutions were effective in removing the plaque after soaking the dentures in the solution for a period of 5 minutes, 15 minutes and 30 minutes.

Table 3 presents the comparison of the effectiveness of plaque removal of the different cleaning agents of the dentures after soaking them for five minutes.

Table 3

Comparison of Plaque Removal Effectiveness of the Different Cleaning Agents after soaking for Five Minutes

Solution	N	Mean	SD	F	Sig.	Verbal Interpretation
Calamansi	2	0.8600	0.05657	4.558	0.088	Not Significant
Lemon	2	0.9250	0.03500			
Brand E	2	0.7350	0.04500			
Brand P	2	0.7350	0.05500			
Total	8	0.8138	0.03525			

Using the test for analysis of variance (ANOVA), the result showed that although there was a decrease in the plaque index scores of the dentures, there was no significant difference ($p=0.088$) in the effectiveness to remove the plaque of the different cleaning agents after soaking the denture in the solution for five minutes. This means that the effectivity of the five solutions to remove the plaque remains the same after five minutes of soaking.

Table 4 presents the comparison of the effectiveness of plaque removal of the different cleaning agents of the dentures after soaking them for 15 minutes.

Table 4

Comparison of Plaque Removal Effectiveness of the Different Cleaning Agents in Fifteen Minutes

Solution	N	Mean	SD	F	Sig.	Verbal Interpretation
Calamansi	2	.9100	0.15556	0.725	0.588	Not Significant
Lemon	2	.9000	0.18385			
Brand E	2	.8300	0.01414			
Brand P	2	1.0150	0.07778			
Total	8	.9137	0.11904			

The comparison of the effectiveness of each solution at fifteen minutes of soaking showed that there was no significant difference ($p=0.588$) after soaking the dentures to the solution. This means that although there was a decrease in the plaque index scores of all the dentures soaked, the ability of the five solutions to remove the plaque after 15 minutes of soaking remains the same regardless of the time of soaking.

Table 4 presents the comparison of the effectiveness of plaque removal of the different cleaning agents of the dentures after soaking them for 30 minutes.

Table 5

Comparison of Plaque Removal Effectiveness of the Different Cleaning Agents in Thirty Minutes

Solution	N	Mean	SD	F	Sig.	Verbal Interpretation
Calamansi	2	1.0350	0.10607	2.184	0.233	Not Significant
Lemon	2	1.1150	0.00707			
Brand E	2	1.0200	0.04243			
Brand P	2	1.1800	0.08485			
Total	8	1.0875	0.08746			

The comparison of the effectiveness of each solution at thirty minutes of soaking showed that there was no significant difference ($p = .588$) after soaking the dentures to the solution. This means that although there was a decrease in the plaque index scores of all the dentures soaked, the ability of the five solutions to remove the plaque after 30 minutes of soaking remains the same regardless of the time of soaking. This also means that the longer the denture stays in the solution the more the plaque is removed.

Just like how individuals who are fully dentate clean their teeth, denture wearers also clean their artificial teeth by brushing the surface with soap or with the use of commercially available denture cleaners. The results showed that all the solutions tested have effectively removed plaque that has adhered on the denture surface. In a study conducted by Yadav R., Yadav V.S., Garg S., Mittal & Garg R. (2013), their findings suggested that combination of brushing the surface and with the use of cleaning solutions effectively removed plaque in the surface of the dentures.

A similar study was also conducted by Mohammed Asif Khan, Sunil Dhaded & Shalini Joshi (2016) on the comparison of plant extract and commercially available cleaners with *Candida albicans* as the main target, and it showed positive results using natural extract and commercially available cleaners.

The result of this study only tested its effectiveness on removing plaque. Other variables such as effect on the denture's surface smoothness, flexural strength and denture material deterioration is not included in the experiment.

Conclusion and Recommendations

The study showed that there is no significant difference in the plaque index score of the dentures after being soaked in commercially available cleaners and citrus solution. Thus, the result has proven that there is no significant difference in the effectiveness between commercially available solutions tested and the citrus solutions considering the different time intervals. Both can be used effectively.

The study only focused on its effect on plaque removal. Due to this limitation, the researchers would like to recommend for future study the effects of the citrus solutions on the denture's surface smoothness flexural strength and other variable that may affect the strength and effectiveness of the dentures.

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