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Knowledge, attitudes and practices of urban Muslim mothers in choosing between health facility and home births: A cross-sectional study

Angela Marie Rosario B. Racoma, Jill Lynn B. Raga, Joy Michelle D. Rahayel, Ma. Hazel Antonette B. Ramores, Mary Jean V. Ramores, Stephanie Marie M. Simbe, Laura Anne S. Sison, Boss B. Sobremesana, Kristina Mae L. Solis, Joseph Patrick R. Sta. Ana, Kelly Ann P. Suanding

Abstract

Introduction The Philippines' high infant mortality rate and maternal mortality rate are influenced by numerous maternal and neonatal risk factors. The authors aimed to determine the socio-demographic data, knowledge, attitudes and practices of urban Muslim mothers in choosing between health professional-assisted births and traditional births.

Methods A cross-sectional study was conducted among urban Muslim mothers residing in Salam Mosque Compound in Quezon City. Respondents, chosen through convenience sampling, were interviewed using a structured questionnaire regarding their socio-demographic characteristics, knowledge, attitudes and practices in choosing between health professional-assisted births and traditional births. They were categorized as having adequate knowledge and positive attitude on the basis of predetermined cut-off scores for each domain.

Results Sixty percent of Muslim mothers surveyed had births in a health facility. Overall, 58.9% of the participants had inadequate knowledge on healthcare. Majority (84%) had a positive attitude towards healthcare, although 40.7% of them still opted to have home births. Mothers who preferred health facility births had their first prenatal checkup during the first trimester with more than seven prenatal checkups during their pregnancy. A greater number of participants also received supplements such as iron, iodine, calcium, and folate.

Conclusion Majority of the mothers have inadequate knowledge, positive attitudes, and varying practices toward healthcare. Higher level of maternal education, relatively higher income, and adequate knowledge on maternal health appear to influence preference for health facility birth over home birth.

Key words: KAP, urban Muslim, birth deliveries

Over the past two decades, the Philippines has shown improvement in reducing child mortality in the attempt to achieve Millennium Development Goal (MDG) 4.[1] Despite this progress, the maternal mortality remains at a critical level, making the MDG 5 unattainable.[2] Many risk factors contribute to the morbidity and mortality of neonates and mothers including mistimed, unwanted and unsupported pregnancy; inadequate care during the course of pregnancy; delivery unattended by a health professional (i.e., nurse, midwives and doctors); lack of access to emergency neonatal and obstetric

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services; and, inadequate postpartum and neonatal care.[3] In the National Demographic and Health Survey (NDHS) 2013, the Autonomous Region in Muslim Mindanao (ARMM) was recognized as the region with the highest under-five mortality (55 deaths per 1000 live births). It is also the region with the highest proportion of women with no antenatal care (35%), where only 12% of births are delivered in a health facility, and where only one out of five births benefit from the services of a health professional.[4] ARMM is a predominantly Muslim area, home to numerous Muslim mothers with different health-seeking behaviors.[5] However, there is limited data regarding Muslim mothers in the Philippines and their preferences in the place of delivery and delivery assistance.

In an effort to contribute to reduce maternal and neonatal deaths, the authors believe that it is important to explore and understand the factors which may have predisposed Muslim mothers in their childbirth preferences in order to give researchers and health program developers a wider perspective on how to improve existing programs in Muslim communities. This study will also benefit educators and health professionals with regard to improving health education and information dissemination. Furthermore, it will supplement the scarce local literature on health-seeking behaviors of Muslim mothers. This study aimed to determine the socio-demographic data, knowledge, attitudes and practices of urban Muslim mothers of Salam Mosque Compound, Quezon City in choosing between health facility and home births.

Methods

A descriptive cross-sectional study design was used to determine the knowledge, attitudes and practices of urban Muslim mothers of Salam Mosque Compound, Barangay Culiat, Quezon City in choosing between health facility and home births through a guided interview using structured questionnaire. The site, one of the oldest base Muslim communities in Manila, was selected due to its large population and ethnic diversity. The major tribes are the Maranao, Maguindanao and Tausug, while the Iranon, Yakan and Sama constitute the minority groups.

Muslim mothers living in the compound whose latest delivery resulted in single or multiple live births, or single or multiple stillbirths, were recruited by convenience sampling. Women 60 years or older and those who refused to participate were excluded.

Data were collected through a guided interview using a structured questionnaire which was formulated by the researchers and validated through a pilot study to ensure comprehensibility. The questionnaire contained items regarding socio-demographic factors and the knowledge, attitudes and practices of Muslim women towards assisted deliveries. Items consisted of open-ended and multiple choice questions for the socio-demographic data, knowledge and practices and yes or no questions for the attitude part. All of the results were categorized into two groups: health facility births and home births. Health facility births were defined in this study as births delivered by health professionals in facilities including, but not limited to, hospitals, and lying-in clinics. Home births were defined as births delivered in houses or other places of residence.

Each question regarding data on knowledge was given a minimum passing score depending on its difficulty. All of the minimum passing scores were tallied and the total score was the minimum passing level (MPL). Adequate knowledge was determined with having at least a score of 15. Positive attitude was indicated with having a score of at least 60%. Results for knowledge and attitudes were interpreted as adequate or inadequate and positive or negative, respectively.

Results on the sociodemographic data, knowledge, attitudes, and practices were measured using frequency distribution. Central tendency, specifically the mean score, was also obtained for the knowledge and attitudes.

Results

Two hundred eighty women were recruited and agreed to participate in the study. Their average age was 32.8 years (range 15 to 60 years); almost 90% were married and most of them came from the Maguindanaoan (45%), Tausug (26%) and Maranao (13%) tribes. Fifteen percent of respondents were college graduates, 20% reached college and 25.7% were high school graduates. More than half of the respondents were unemployed (59%) while the rest were self-employed or working; 43% had household incomes less than PHP 40,000 annually. Households consisted of 3 to 5 persons in 46%, 6 to 8 persons

(30%) or at least nine persons (21%). Six out of 10 respondents delivered in a health facility. Figure 1 shows that 45 to 65% of mothers from all ethnic groups except the Sama tribe delivered in a health facility.

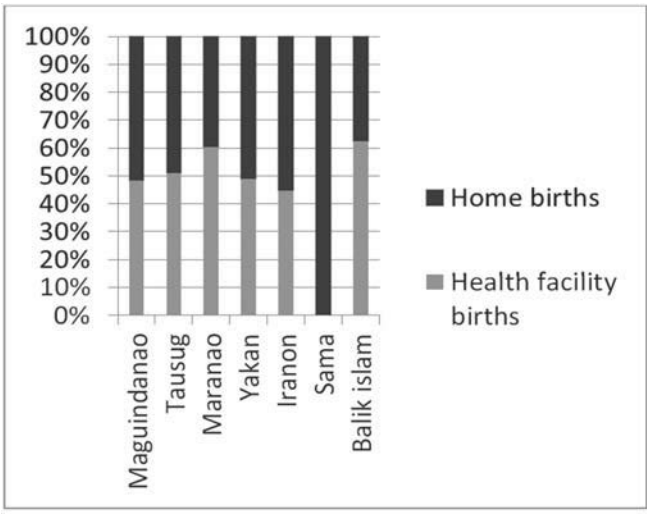

Figure 1. Distribution of health facility and home births according to ethnicity.

Figure 2 shows an increasing preference for a health facility birth with higher educational attainment, except for those mothers who never attended school - all delivered in a health facility. As seen in Figure 3, majority of the mothers who were not working or were self-employed delivered in a health facility while the working mothers delivered at home. Figure 4 shows that those mothers from all income groups, except the PHP 40,000 group, preferred a health facility delivery. Figure 5 shows a general trend towards home delivery with increasing household size.

Knowledge The mean knowledge score of the whole group is 13.9 out of 23, with 40% of respondents having adequate knowledge (MPL = 15). Among women with adequate knowledge, 70% opted for a health facility birth while a majority of the other group chose a home birth as seen in Figure 5.

Attitude The mean attitude score of the respondents is 6.7 out of 9, indicating that most of the Muslim mothers have positive attitudes towards health care. A larger proportion of those with a positive attitude (81%) preferred health facility births whereas those with a negative attitude had a slight preference for home delivery.

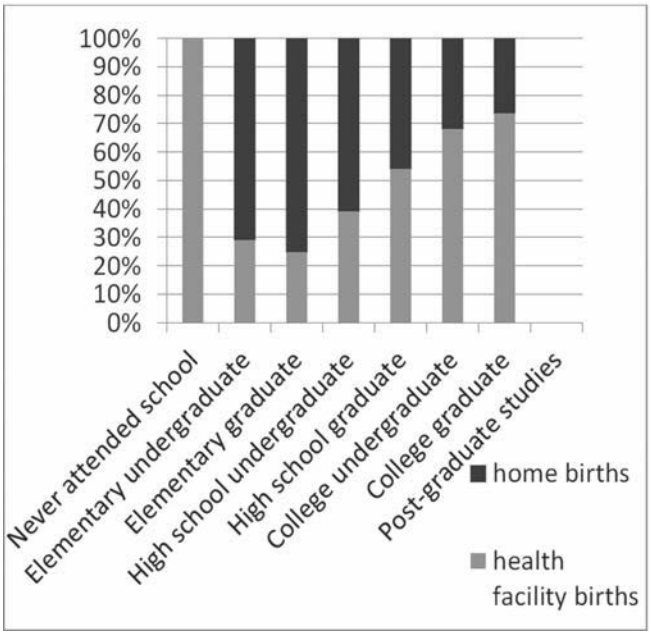

Figure 2. Distribution of health facility and home births according to level of education.

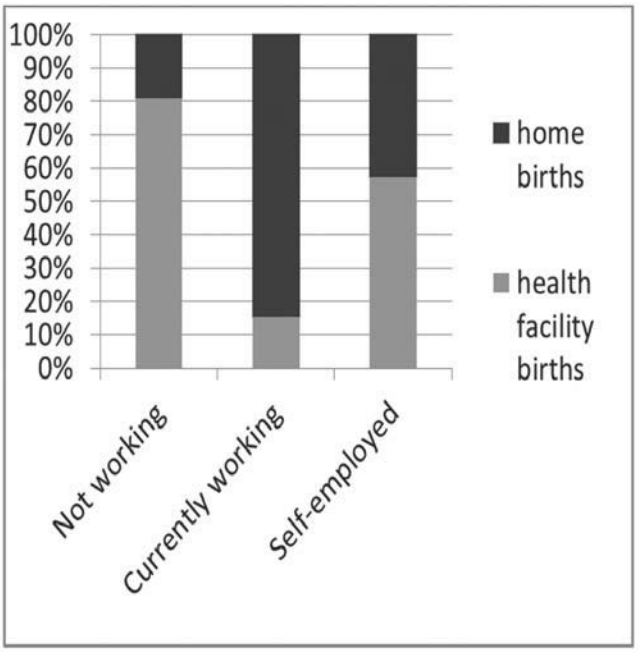

Figure 3. Distribution of health facility and home births according to occupational status.

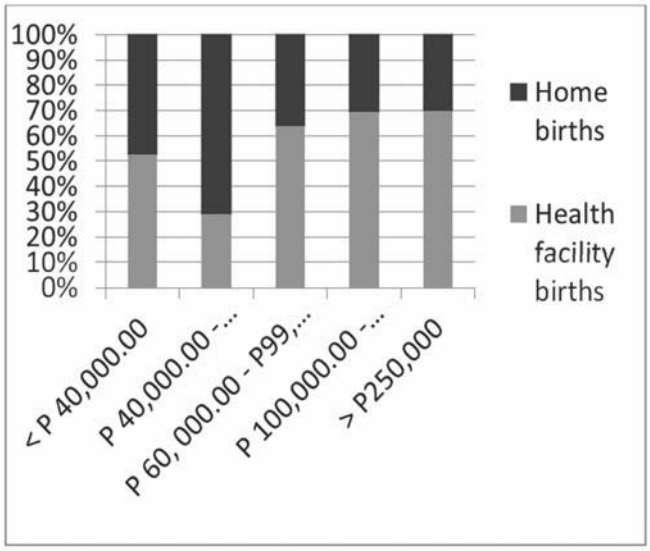

Figure 4. Distribution of health facility and home births according to annual household income.

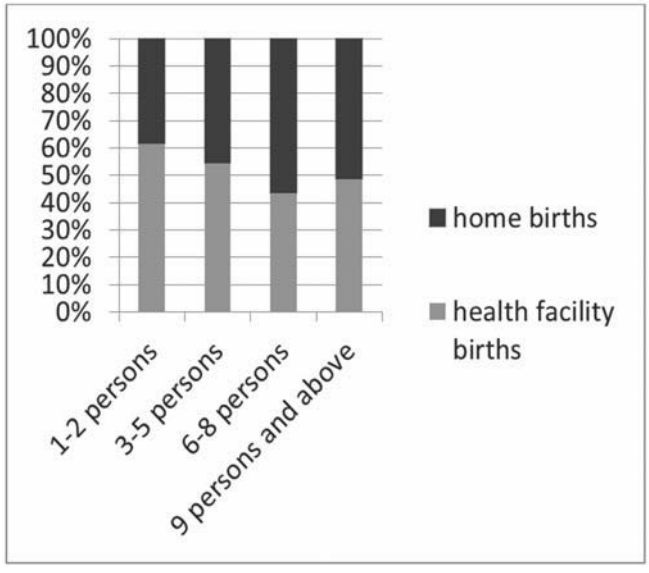

Figure 5. Distribution of health facility and home births according to household size.

Practice Around two-thirds of mothers aged 19 to 35 years delivered in a health facility. More than half of women with at least four prenatal visits delivered in a health facility (Figure 6); 66.2% of those who had their first prenatal visit in the first trimester of pregnancy delivered in a health facility. Almost all (97.5%) of latest deliveries resulted in a live birth, with 59.3% coming from a health facility. Supplementation of iron, iodine, folic acid and calcium was generally higher in mothers who preferred health facility deliveries. Tetanus toxoid was given to 83.6% of the population, of which 61% delivered in a health facility.

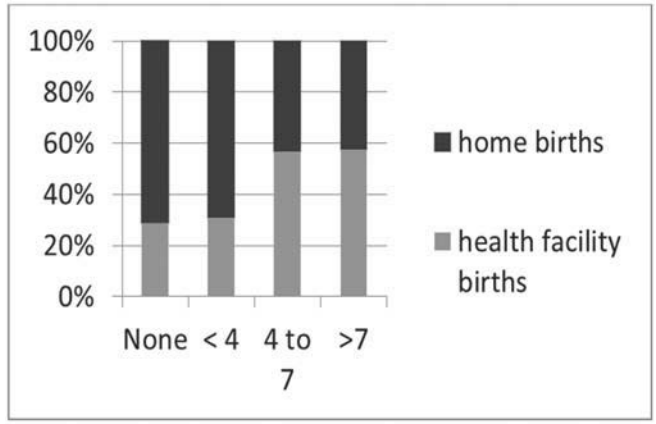

Figure 6. Distribution of health facility and home births according to number of prenatal checkups.

The main reasons for choosing health-professional assisted births were access to the obstetrician in case of birth complications (37%), trust in the health professional (25%), and concern for a clean delivery (21%). The other reasons were accessibility, decision of relatives, and need for cesarean section delivery. The top three reasons for choosing traditional births were inconvenience for going to a health facility (37%), inadequate finances (31%) and personal preference (18%). Other reasons for not choosing health professional-assisted births were absence of companion to the facility, emergency birth deliveries, and lack of transportation to health facility.

Discussion

Considering the cultural and gender minority status of Filipino Muslim women, together with the lack of research on their reproductive and maternal health, Filipino Muslim mothers continue to be underrepresented and their conditions, un-recognized. Current data on Filipino Muslim mothers are mainly represented by the data of ARMM which has a predominantly Muslim

population.[5] Despite the Quezon City Ordinance SP-2171 passed in 2012 which prohibits home births in Quezon City, the study showed that 40% of the respondents preferred home deliveries over health facility deliveries within the last three years.[6]

Majority of mothers who preferred health facility births were unemployed and self-employed whereas most of those who were currently working preferred home births. These results, inconsistent with previous findings, may be explained by the capacity of housewives to provide more attention and time to their pregnancies.[4] The results show that socio-economic status of the mothers influences the preference in seeking healthcare services. An Ethiopian survey showed a positive association between women's wealth index and utilization of health care services.[7] This shows that, in general, women with a higher income prefer health facility births than home births.

Receiving prenatal care was found to be associated with the level of education of mothers, with almost equal prenatal care availment for those with at least elementary education up to college education and a low percentage for those with no education.[7] In a local study, educational attainment of women was associated with the use of maternal care services.[8] The degree of education was directly proportional to the use of maternal healthcare services. Other foreign studies also support the positive effect of education on maternal health-seeking behaviors.[9,10]

Knowledge A study in rural Bangladesh revealed that one of the determinants of the use of maternal health services is the mother's knowledge in the utilization of health care services.[11] In contrast, this study found out that more mothers who had inadequate knowledge on maternal health utilized health care services by choosing birth deliveries assisted by a health professional. The discordance in the results of the present study may be explained by the educational attainment of the mothers. Low level of knowledge regarding the use of maternal health care services among urban and rural women appears to correspond to an equally low rate of utilization of health facilities for delivery and for family planning services.[12]

Attitude A study in England revealed that many Muslim women do not receive good quality maternity care.[13] This could be attributed to the lack of appropriate, easily understandable information on health care during pregnancy, childbirth and postnatal period, resulting in the lack of involvement and choice of Muslim parents. Poor quality and insensitive care received by many women appeared to be a result of some stereotypical and racist views. In this study, there was a higher proportion of participants with a positive attitude towards the health care facility. A larger proportion of those who had a positive attitude were mothers who preferred health facility deliveries. However, there was a substantial proportion of mothers who preferred home birth despite having a positive attitude towards healthcare. This may be attributed to the influence of other factors such as inadequate finances, busy schedules, and accessibility of the health facility.

Practices A higher proportion of mothers who preferred health facility births were seen in the 19 to 35 age range at last delivery. Seeking prenatal care may positively influence decision-making on birth deliveries due to awareness of possible complications for both the mother and the baby during delivery, accessibility of life support equipment and specialists for emergencies, and other health-related concerns. This study revealed that majority of the mothers, regardless of preference for either birth deliveries, had their first prenatal checkup during the first trimester, attended more than 7 prenatal consultations, and received supplements such as iron, iodine, folate and calcium. These reflect the women's good compliance with the DOH's recommended prenatal care.[3]

In a systematic review of literature of the factors affecting the utilization of prenatal care in developing countries, the best predictor of prenatal care visits is women's education, wherein women with better education were more likely to receive the recommended number of check-ups.[14] Higher household and economic status lead to adequate and early prenatal care visits. In this study, majority of the mothers had lower educational attainment, inadequate knowledge on maternal health, and lower socioeconomic status. Despite these factors, the majority of the women surveyed still had better health-seeking behaviors as evidenced by their earlier time of seeking prenatal check-up, higher number of check-ups during the whole course of pregnancy and good compliance in taking supplements. This highlights the importance of the women's positive attitudes towards health professionals since it is most likely the major factor that led them to have better health-related behaviors and decisions.

Results further showed that among mothers who had four or more prenatal visits, who had their first prenatal check-up during the first trimester, and who received supplements, a higher proportion had health facility births. In contrast, a higher proportion of mothers with first prenatal visit during the second or third trimester, with no check-ups at all and with less than four to no check-ups, had home births. Overall, the outcome of pregnancy is uneventful, as evidenced by 97.5% of deliveries being live births, with a higher proportion coming from mothers who chose health facility births. These findings suggest that from the onset of the pregnancy, those who had their prenatal care visits at an earlier time had been informed about what they need to know regarding their pregnancy (e.g., risks) and had planned their deliveries early on. This may have resulted in better compliance to check-ups and intake of supplements and may have also increased their confidence in choosing health facility deliveries. Consequently, mothers may have developed better attitudes toward healthcare, leading to availment of health service and possibly, less future maternal and neonatal complications.

Some of the factors that affect maternal and neonatal health are deliveries without assistance of a health professional and inadequate prenatal care. Despite the efforts of the Department of Health (DOH) to encourage mothers to engage in their program of safe motherhood, a percentage of the population still choose to give birth at home.[15] Most of the reasons of Muslim mothers who preferred to have home deliveries were inadequate financial support as reflected by the number of Muslim mothers who have low income; personal preference of giving birth at home due to convenience and traditions in the family; and far distance from healthcare facilities. Other reasons were absence of companion to the health facility, emergency deliveries, and lack of transportation to the health facility. These reasons reflect the inadequacy of knowledge of most Muslim mothers regarding the programs of the DOH which provide access to high quality maternal health services and cost-effective birth deliveries.

While some Muslim mothers chose home births, most preferred to have their deliveries in lying-ins or hospitals. Mainly, their reasons for seeking health-facility deliveries were access to the specialist in case of birth complications, trust in the health professional, and concern for a clean delivery. These reasons support the earlier finding that majority of the participants have positive attitudes toward health professionals.

Seeking adequate prenatal care is also essential since it highly affects ease of birth deliveries. Most of the Muslim mothers attended their scheduled prenatal checkups; however, some were not able to attend due to certain factors such as forgetting consultation schedules, fear of doctors, and preoccupation with other activities. These reasons suggest a slightly negative behavior of some of the mothers which may be explained by their inadequate knowledge on maternal healthcare. Inadequate knowledge may have predisposed them to being less confident and less able to make good decisions regarding their own health. Other factors that may have contributed to the low utilization of prenatal were financial constraints and cultural barriers. Previous studies found that one of the major factors that hinder women in developing countries from utilizing health services was the cost of service, including transportation and laboratory tests.[16,17] According to another study, one cultural factor that made Muslim women less likely to use reproductive and sexual health services was the lack of privacy (e.g., exposure of legs) that came with checkups.[18] Another barrier that limited prenatal care consultation use was that in some cultures, women perceived health care services to be for curative purposes only.[19]

Socio-demographic characteristics of urban Muslim mothers did not have much difference between those who chose health facility births and home births. Educational attainment and annual household income appeared to influence the choice of birth delivery, where participants who have higher education and higher annual household income showed a greater preference for health facility births.

Majority of the participants have positive attitudes towards maternal health care. Positive attitudes may have influenced the decision of the majority to choose health facility births. However, more than half of the participants have inadequate knowledge on maternal health. Due to inadequate knowledge, a portion of those with positive attitude still prefer home births, which may have been due to factors such as inadequate finances, personal preference, and/or inconvenience of going to the health facility. This reflects that despite the efforts of the Department of Health to encourage mothers to engage in their program of safe motherhood, most Muslim mothers

are still unaware and have inadequate knowledge of such programs.

This study recommends the promotion of maternal education and information dissemination in order for mothers to be more aware of the risks of complications during pregnancy, delivery and postpartum period. Maternal education is still of utmost importance towards better health-seeking behaviors of mothers.

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The correlation of the delinquent behaviors of institutionalized children in conflict with the law with parental discipline, peer delinquency and neighborhood disorganization

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Abstract

Introduction The increasing prevalence of children in conflict with the law is a problem in Metro Manila. This study aimed to understand the factors, specifically parental discipline, peer delinquency, and neighborhood disorganization that predispose a child to engage in delinquent acts.

Methods This was a correlational study in which children in conflict with the law who were institutionalized at the Manila Youth Reception Center were surveyed. The subjects were given three sets of questionnaires which measured parental discipline, peer delinquency, and neighborhood disorganization, respectively. Spearman's rho correlation coefficient was computed using SPSS.

Results Delinquent behavior is very weakly and positively correlated with peer delinquency (r = 0.18) and neighborhood status (r = 0.10), and is very weakly and inversely correlated with parental discipline (r = -0.10). These correlations were not statistically significant.

Conclusion The study showed that parental discipline, peer delinquency, and neighborhood disorganization may influence a child's delinquent behavior.

Key words: CICL, delinquency, parental discipline, peer relations, neighborhood disorganization

Juvenile delinquency has been a subject of major research in the fields of law, criminal justice, and psychology. Statistical data from the World Youth Report indicate that in virtually all parts of the world, except in the United States, rates of youth crime rose in the 1990s.[1,2]

It is well recognized that delinquents reside in communities that have high delinquency rates. They attend schools with unclear and inconsistently enforced rules and have poor teacher-student relationships. They often live in deprived areas characterized by neighborhood disorganization, physical deterioration, and high residential mobility.[3,4] The relationship between parent-child interactions and delinquency has not however, been straightforward since a variety of family variables (such as parental attachment, hostility, rejection,

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supervision, and involvement) have been proposed to influence adolescent's delinquent behavior.[5,6] However, the role of parental involvement may be considered debatable in some cases due to the tendency to seek autonomy and independence from the family, and divert towards peers. Peers, on the other hand, influence the youth's beliefs and attitudes about what is appropriate or inappropriate, and behavior.[7] Together with parental involvement and environmental factors, it is undoubted that a child's peer relations also affect development.

As a response, this study sought to better understand the root and risks of delinquent behavior of children in conflict with the law. This study aimed to 1) describe the demographic profile of the children in an institution; 2) determine the correlation of specific factors: a) parental discipline, b) peer delinquency and c) neighborhood disorganization with the delinquent behavior of children in conflict with the law; and 3) determine the factor that has the strongest correlation with delinquent behavior.

Methods

This was a correlational study that looked into the factors, specifically parental discipline, peer delinquency, and neighborhood disorganization that may predispose a child to engage in delinquent acts in a Philippine urban setting. Those institutionalized in the Manila Youth Reception Center who met the inclusion-exclusion criteria were randomly selected in batches and made to answer an integrated questionnaire. Results from the questionnaire were interpreted through correlation with the aid of SPSS. This study was approved by the Ethics Review Committee of the medical center.

The respondents were male or female children, 14 to 18 years old, in conflict with the law (CICL) who were currently confined in the Manila Youth Reception Center in Ermita, Manila. Inmates who were diagnosed with psychiatric illness and those with other medical conditions that made them unfit to participate were excluded. The computed sample size was 106 using the prevalence rate of 0.38, and 1.96 for the level of confidence. Respondents were randomly selected in batches of 10 to 15 per group.

Children in conflict with the law were youth offenders confined in Manila Youth Reception Center who had either official or pending cases. Delinquency was behavior deviating from the norm of the age group and was determined through their official criminal records from the facility. The factors or antecedent conditions that may have caused or increased the likelihood of committing an offense and were present before the delinquent act were: parental discipline, peer delinquency and neighborhood disorganization.

Parental discipline, how the biological parents or parental figures discipline the child, was measured through the use of the Parenting Styles and Dimensions Questionnaire (PSDQ). The questionnaire consisted of 18 5-point Likert-type items (nine items each that focused on the mother and father, respectively).[8] The items were answered from 1 (never) to 5 (always); the scores of each item were summed and graded as follows: weak (1-30), moderate (31-60) or high (61-90) parental discipline.

Peer delinquency, the involvement of close friends in various delinquent behaviors, was measured by the use of the Self-Report Delinquency Scale that was previously validated to be used for the measurement of peer delinquency.[9] The respondents were asked to indicate if any people whom they considered their close friends had engaged in the stated behaviors within the last year, scored as 1 (no), and 2 (yes). The responses of the items were summed for each respondent to generate a measure of the extent of delinquency among peers. Those who scored 1-27 were categorized as having low; 28-55, moderate; and 56-82, high peer delinquent involvement.

Neighborhood disorganization is the lack of access to social protection, health and education opportunities, presence of a poorly structured physical environment and rampant delinquency, and violence seen in the community. Based on journals that looked into neighborhood influence on juvenile delinquents, a survey questionnaire was constructed and administered for pilot testing. A 17-item questionnaire was tested on 35 participants and analyzed using a reliability test. It was modified accordingly and was trimmed down to a 13-item questionnaire answerable by yes (2) or no (1). Validation of the tool was conducted by a professional. The questionnaire was scored accordingly: low (1-8), moderate (9-16), high (17-26) neighborhood disorganization.

The questionnaires were obtained and pilot-tested and found to have high Cronbach's alpha coefficients (parental discipline 0.73 with items trimmed to 16; peer delinquency 0.95 with items trimmed to 41; and neighborhood disorganization 0.72 with items

trimmed to 13). These scales were translated into Filipino by the researchers, and were reviewed by a professional. Questionnaires on parental discipline, and peer delinquency were validated by previous studies in the Philippine urban setting. The neighborhood disorganization questionnaire, on the other hand, was validated by an expert.

At the institution, respondents were oriented on the purpose and objectives of the study. Respondents answered the questionnaires in batches of 10-15 persons. Permission for participation was obtained through a written agreement secured from the parental guardians of the institution, and assent from the respondents themselves. Upon accomplishment of assent forms and verbal agreement to participate in the data collection, the researchers distributed the questionnaires. Each researcher was tasked to monitor and help explain further the items to the respondents. It took 15-20 minutes for each subject to answer the questionnaire. The identity of each respondent was coded to maintain confidentiality.

After data were collected, scores were encoded in Microsoft Excel and analyzed through SPSS for Windows. Correlation analysis using Spearman's rho was done to determine the relationships between delinquent behavior and parental discipline, peer delinquency and neighborhood disorganization.

Results

There were 106 respondents, almost 90% of whom were males aged 16-18 years (Table 1). Most of them did not finish grade school and only one-third reached high school. Their offenses included but were not limited to the following: theft, qualified theft, robbery, breaking and entering, arson, carnapping, assault, rape and murder. Table 2 shows that less than half of their parents were married and that one out

Table 1. Demographic profile of respondents.

Characteristic	Number (%)
Age (years)	
<16	9 (8.5)
16-18	97 (91.5)
Gender	
Male	88 (83)
Female	18 (17)
Highest educational attainment	
Grade school graduate	1 (0.94)
Grade school	66 (62.3)
High school graduate	3 (2.8)
High school	33 (31.1)
College graduate	0 (0)
College	1 (0.94)
No answer	2 (1.9)

Table 2. Information of respondents' parents and/or caregivers.

Characteristic	Number (%)	
Parents' civil status		
Married	45 (42.5)	
Separated	24 (22.6)	
Never married	33 (31.3)	
Widow/widower	2 (1.9)	
No answer	2 (1.9)	
Primary caregiver		
Both parents	54 (50.9)	
Mother	23 (21.7)	
Father	5 (4.7)	
Extended family (e.g. grandmother, aunt, etc.)	23 (21.7)	
No answer	1 (0.9)	
Parents' occupation	Father	Mother
ISCO-08 4 (clerical support workers)	2 (1.9)	2 (1.9)
ISCO-08 5 (service and sales workers)	8 (7.6)	10 (9.4)
ISCO-08 6 (skilled agricultural, for-estry and fishery workers)	3 (2.8)	--
ISCO-08 7 (craft and related trades workers)	5 (4.7)	--
ISCO-08 9 (elementary occupations)	63 (59.4)	32 (30.2)
Unemployed	8 (7.6)	50 (47.2)
No answer	17 (16.0)	12 (11.3)

of two CICL were raised by both parents. Majority of the respondents' fathers had elementary occupations based on the International Standard Classification of Occupations (ISCO), while almost all of the mothers were unemployed or plain housewives.

At least seven out of 10 respondents felt that parental discipline was just right, that they were loved, and that they had moderate ability to control their actions, as seen in Table 3. More than 90% of respondents had committed misbehaviors and/or violations of laws while at least three-fourths had friends who had committed misbehaviors and/or violations of laws.

Table 3. Additional information on respondents.

Characteristic	Number (%)
Manner of discipline at home	
Harsh	4 (3.8)
Just right	97 (91.5)
No discipline	5 (4.7)
Feel loved by their parents or caregivers	
Yes, very much	80 (75.5)
Yes, but not so much	22 (20.8)
No	4 (3.8)
Ability to control actions and behaviors	
Strong	7 (6.6)
Moderate	77 (72.6)
Weak	22 (19.8)
Committed misbehaviors or violations of laws	
Yes, several times	53 (50.0)
Yes, once or twice	45 (42.5)
No	8 (7.5)
Have friends who committed misbehaviors or violations of laws	
Yes, several times	67 (63.2)
Yes, once or twice	16 (15.1)
No	23 (21.7)

Spearman's Rho correlation coefficient was computed and showed that delinquency had a very weak direct correlation with peer delinquency ($r = 0.18$), neighborhood disorganization ($r = 0.10$), and a very weak inverse correlation with parental discipline ($r = -0.10$). Peer delinquency had the highest correlation with delinquency among the three parameters. The correlations were not statistically significant.

Discussion

In recent years, studies that have focused on the risk factors related to juvenile delinquency grouped them into three broad categories: the individual, social, and community categories.[14] In this study, the researchers focused on the social and community categories and neighborhood disorganization.

Most studies on juvenile delinquency focus on parental influence and assert that those children who received adequate parental supervision had lower risks for delinquency. Findings of the present study are consistent with studies that showed a positive correlation between negative parental relationships and juvenile criminal activity.[3] The results showed that delinquency is negatively correlated with parental discipline, consistent with Farrington's conclusion that when children receive weak disciplining from parents, they become more delinquent. The results are consistent with the findings of the Pittsburgh Youth Study that poor parental supervision and low persistence in disciplining predispose a child to eventually become delinquent. When looking at different factors in the analysis of parental discipline, three of the six can be considered as negative forms of parental discipline (scolding and criticizing, imposing obedience of the child without explaining why, and the use of physical punishment), indicating a negative parental relationship with the adolescent. The results are consistent with the findings of McCord regarding poor parental supervision and negative forms of disciplining such as use of physical punishment and rejecting attitude predict delinquency.[6] McCord showed that adolescents with parents who had both high demands and responsiveness resulted in better outcomes.[6]

Adolescents may become predisposed to delinquent behaviors as they become more peer-oriented and start to build relationships outside the family.[7] Those who tended to fraternize with delinquent peers were noted to have increased delinquency.[11] A study on Vietnamese youth showed that there was less likelihood of exhibiting delinquent behaviors or becoming gang members if they did not associate with delinquent peers, even if they had the same problems in school and in their neighborhood.[13] This shows that peers are a significant factor in predicting delinquent behavior. A study by Childs, Sullivan and Gulledge found that peer delinquency significantly predicted a child's delinquency, such that one unit of increase in peer delinquency was found

to lead to a 5.1% increase in the expected count of a child's delinquent behavior.[16]

This study showed that among the three factors, peer delinquency had the highest correlation with delinquency, consistent with Kornhauser's finding that that peer delinquency is the most robust predictor of delinquency in a child.[10] Majority of the participants in the present study had peers who were involved in theft, property violation, gang fights, use and selling of drugs, school truancy, and cheating in school. The study showed a very weak positive correlation between delinquency and peer delinquency, suggesting that the behavior of peers affects the delinquency behavior of an individual but may not play a significant role in how one becomes a delinquent. The researchers found that this may be attributable to the selectiveness of the peers' involvement in delinquency. Respondents who were institutionalized for drug abuse tended to have friends who also engaged in drug-related activities and scored lower in the other aspects of delinquency, thereby causing a positive but insignificant relationship between delinquent behavior and peer influence.

Nevertheless, studies show that peers play a vital role in the development of delinquent behavior. This may be because this developmental stage is geared towards participating frequently in different activities outside the family. Adolescents are more likely to be influenced by peers rather than their family because they value independence and sense of self. Since they engage in social experimentation, they are more vulnerable to doing activities that are against the law. Furthermore, it must also be noted that many of this study's participants came from broken families, stressing the importance of the family.

Neighborhood disorganization also played a significant role in the etiology of the delinquent behaviors of the respondents. Majority of the subjects said that rampant delinquency in the neighborhood, observed violence, poor physical condition of the neighborhood, and limited access to social protection, health and education opportunities predisposed them to commit delinquent behaviors. The results showed a very weak positive correlation between delinquency and neighborhood disorganization. Wilson showed that exposure to violence may predispose a child to commit violent behavior and being a victim of violence puts a child at a greater risk of developing antisocial behavior.[15] A child who knew an adult criminal in the neighborhood, or had been exposed to delinquent acts and disorganization in the community was most likely to engage in violent acts.[5] The result of the study may be attributed to the differences in the personality and neighborhood experiences of the respondents.

The results may have been due to measurement constraints, being limited only to available variables. First, the familial aspect of the study is broad and complex. Various familial factors such as parental nurturance, parental presence, family communication, parental values and broken family, may closely influence parental discipline, which was the focus of this study. In addition, peer variables were limited to the perception of peer delinquency rather than the actual occurrence of delinquency, as this study relied purely on self-report measures. Second, the child may have been selectively involved with a specific group that engaged only in a specific behavior such as theft, but not in other behaviors such as robbery, kidnapping, or drug trafficking. Third, as the study is mostly self-report, there is the possibility that adolescent reports in this study overestimate their own projections onto others to make them appear more similar to themselves.

This study used only three factors - parental discipline, peer delinquency, and neighborhood disorganization - in relation to a child's delinquent acts. A recommendation for future studies would be to explore other factors or shift the focus. It would also be preferable to factor in the effect of broken families when exploring parental influences on CICL. Second, only one institution was surveyed. It may be more fruitful to survey several institutions to be able to compare the neighborhood features of different populations. The differences between the areas of the responsibility of different institutions may factor in on child delinquency as well. Also, the sample size was limited because only one institution was surveyed, which may have affected the significance value of the study. Third, because self-report measurements rely on the participants' truthful answers to personal questions, it is recommended that parental and/or peer reports of adolescent delinquency be obtained. Lastly, it may also provide more depth to the study if a qualitative approach is added on top of the quantitative approach in order to assess other factors in relation

to the items in the questionnaire to gain more understanding of the complexity of the subject.

The study showed that parental discipline, peer delinquency, and neighborhood disorganization may influence a child's delinquent behavior. Overall, the results of this study are consistent with many other studies on delinquency in an urban setting in developing countries.

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The effectiveness of key lime (*Citrus aurantifolia*) inhalation aromatherapy as an adjunct in alleviating dizziness among hemodialysis patients: A randomized controlled trial

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Abstract

Introduction Dizziness is a common symptom experienced by patients undergoing hemodialysis. There have been some studies that show inhalation aromatherapy to be a simple and non-invasive way in reducing several symptoms including nausea and vomiting. This study aimed to determine if the use of key lime oil inhalation aromatherapy is effective as an adjunct to nursing interventions in reducing the duration of dizziness experienced by patients during hemodialysis.

Methods This was a randomized, placebo-controlled trial which assessed the efficacy of key lime oil inhalation aromatherapy in the relief of dizziness. The participants were asked to rate their dizziness using the Modified Borg Rating Scale for Dizziness before and after intervention and were timed until the dizziness was completely relieved.

Results The key lime inhalation aromatherapy and control groups were comparable, including their baseline dizziness ratings. Key lime inhalation aromatherapy alleviated dizziness in a significantly shorter time (4.8 vs 22.7 minutes, p = 0.03).

Conclusion Key lime inhalation aromatherapy is effective as an adjunct treatment for dizziness experienced by patients during hemodialysis.

Key words: Key oil, inhalation aromatherapy, dizziness, hemodialysis patients

Each year, an estimated 120 per million Filipinos develop kidney failure, meaning that approximately 10,000 Filipinos need to undergo various kidney treatments each year, including hemodialysis.[1] Hemodialysis is the most common procedure in treating patients with renal failure.[2] It is a form of replacement therapy that involves removing wastes from the blood via ultrafiltration from an external source.[3] However, hemodialysis is associated with complications and discomfort to the patients, with dizziness being the most common.[4] Intradialytic hypotension is a major cause of dizziness, requiring nursing interventions such as

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elevation of the patient's lower extremities, adjustment of the hemodialysis ultrafiltration rate, and/or administration of intravenous fluids.[5]

To help address this problem of dizziness during hemodialysis, the use of inhalation aromatherapy was investigated in this study. Aromatherapy is a complementary therapy that is purported to help patients cope with various symptoms including nausea, vomiting, and pain.[6] However, experimental studies on inhalation aromatherapy using citrus fruits such as lemon have not addressed the symptom of dizziness.[7] Furthermore, these studies have not explored the potential of key lime as an inhalation aromatherapy intervention. Key lime, locally known as dayap, is very abundant in the Philippines and has been anecdotally used to alleviate nausea.[8] Its peel contains a volatile oil with limonene, which is also found in lemon, as one of the main components.[9] This study aimed to determine 1) if there was a significant decrease in the duration of dizziness experienced by patients undergoing hemodialysis and 2) if the use of key lime oil inhalation aromatherapy was beneficial as an adjunct to nursing interventions in reducing the duration of dizziness of patients undergoing hemodialysis.

Methods

This was a double-blind randomized placebo-controlled trial to determine the efficacy of key lime inhalation aromatherapy in alleviating dizziness among patients undergoing hemodialysis in several centers in Quezon City from April to August 2015. The Modified Borg Rating Scale for Dizziness was used to measure dizziness before and after treatment.[10] The time it took to relieve dizziness was compared between the key lime aromatherapy and placebo groups. The study was approved by the Ethics Review Committee of the medical center.

Male or female patients aged 21 to 65 years, with a history of dizziness while undergoing dialysis, were recruited. Patients were excluded if they were 1) disoriented or having language barrier problems, 2) diagnosed by a doctor to have vertigo and/or cranial nerve VIII lesion, 3) diagnosed by a doctor to have anosmia and/or cranial nerve I lesion, 3) planning to transfer to another dialysis center during the duration of the study, 4) pregnant, 5) on their first three months of dialysis treatment, 6) diagnosed with asthma or having complaints of nasal discharge, nasal congestion, and the like during the onset of dizziness. Patients who agreed to participate in the study completed a preliminary survey form with the assistance of the researchers to check if they fit the inclusion and exclusion criteria. Eligible patients who consented were randomly assigned to either treatment group or control group using Microsoft Excel. A sample size of six participants per group was computed based on a standard deviation of 2.33, difference of 3, 95% confidence and 20% drop out.[7] Subjects were chosen from among the patients through purposive sampling. Patients were given instructions on what to do when they experienced dizziness during hemodialysis including how to rate their dizziness before and after the intervention using the Modified Borg Rating Scale for Dizziness (MBRSD) with 0, being the lowest and 10, the highest.[10] The first six subjects under treatment group and the first six subjects under control group to report dizziness during hemodialysis were included in this study.

The administration of the key lime and the placebo was done by the researchers, following a standard procedure developed for the study which included concealment and randomization. Similar containers were used for the key lime oil and the placebo. Additionally, every researcher assigned to a participating hemodialysis center was instructed not to wear any perfume to minimize confounding scents. During the course of the hemodialysis treatment, once a patient reported dizziness of any cause to the assigned researcher for the day, the patient was asked to rate his dizziness using MBRSD. With gloved hands, the researcher prepared a cotton ball in a small white plastic container with 3 drops of key lime oil if the patient belonged to the treatment group or 3 drops of distilled water if the patient belonged to the control group. The patient was then instructed to inhale deeply from the prepared cotton ball up to 1 minute while the researcher held the small white plastic container with the cotton ball 1-2 cm away from the patient's nose. After inhalation, the patient was instructed to rate his or her dizziness every two minutes until he or she did not feel any dizziness with a rating of MBRSD of 0. Cotton balls were discarded after 1 hour and a new one was provided for each patient if the need arose. The duration of dizziness was recorded with a stopwatch by the researcher from the onset of the first cotton ball inhalation up to the time the patient reported a

rating of MBRSD 0. The patient's baseline blood pressure at the start of hemodialysis and the hemodialysis ultrafiltration volume noted from the hemodialysis machine were recorded by the researcher in a monitoring sheet along with the specific nursing interventions provided by the hemodialysis staff, MBRSD rating, and time it took for the dizziness to be alleviated.

There was no available locally-produced key lime oil in the Philippines when the study was conducted. The key lime oil used in this study was prepared from the key lime peel by Edens Garden in San Clemente, California, USA and was purchased and shipped through Amazon in sealed bottles. The key lime oil product for the treatment group was colorless; hence distilled water was used as a placebo control.

The demographics of the population were compared using descriptive statistics. An independent t-test was conducted to determine if the key lime inhalation aromatherapy and placebo groups were comparable in terms of pre-intervention dizziness rating, blood pressure, and ultrafiltration volume. A one-tailed t-test was used to determine whether there was sufficient evidence to conclude that there was a significant difference between the control and treatment group in terms of the time it took for the alleviation of dizziness. Finally, Shapiro-Wilk Test was employed to check normality assumption. Data analysis was done using SPSS.

Results

Of the 10 dialysis centers invited, two responded. There were 39 hemodialysis patients who qualified for the trial after a preliminary survey and who were randomly allocated into key lime inhalation aromatherapy group or control group in both dialysis centers. The first 12 subjects who reported dizziness during hemodialysis (6 subjects in the treatment group and 6 subjects in the control group) were included in the study. There were no subjects who reported dizziness at same time in the same hemodialysis center. There was no dropout or loss to follow-up or voluntary exit among the participants. The study intervention was administered to all the 12 subjects simultaneous with the nursing interventions provided by the hemodialysis staff; this included elevating the lower extremities in 11 subjects, adjusting the hemodialysis ultrafiltration rate in one subject, and allowing two subjects to eat. No subject needed intravenous fluid replacement or medications to relieve the dizziness.

Table 1 shows that there were no significant differences in the baseline characteristics, including the dizziness ratings, of the key lime inhalation aromatherapy and control groups. All 12 subjects had anemia in addition to chronic renal failure. It took an average of 4.8 minutes to relieve dizziness in the key lime inhalation aromatherapy group compared with 22.7 minutes in the control group. The difference was significant (mean difference = 17.9 min, p = 0.03, 95% CI <0.01, 35.8). The Shapiro-Wilk test showed that the assumption of normality for a non-parametric test was not violated. There were no adverse effects reported from both the key lime inhalation aromatherapy and control groups.

Table 1. Comparison of baseline characteristics of key lime aromatherapy and control groups.

Characteristic	Control*	Key lime aromatherapy*	Mean difference (SE)	p-value (95% CI)**
Age (yr)	49.2	53.3	-4.17±4.60	0.39 (-14.4, 06.1)
Sex distribution (M:F)	2:4	2:4		
MBRSD rating	5.3	4.7	0.67±1.27	0.61 (-2.17, 3.50)
Systolic pressure	143.0	136.7	6.33±7.49	0.42 (-10.4, 23.0)
Diastolic pressure	80.0	81. 7	-1.67±1.67	0.34 (-5.4, 2.0)
Ultrafiltration volume	2405.67	2316.00	89.67±997.60	0.93 (-2133.13, 2312.46)
No. of years since start of dialysis	5.8	4.8	1.00±2.16	0.65 (-3.8, 5.8)
No. w/ other illnesses	4	5		
No. w/ other medications	4	5		

* Means, unless indicated otherwise
**Independent t-test

Discussion

Dizziness is the most common symptom experienced by patients undergoing hemodialysis and may have several causes including hypotension, hypoglycemia, and anemia; the treatment is usually directed to the specific cause.[4] Eleven of the 12 subjects required elevation of the lower extremities and one subject needed adjustment of hemodialysis ultrafiltration rate and thus, it can be assumed that majority of the subjects had hypotension as the main cause of dizziness during hemodialysis. Hypoglycemia most likely contributed to the dizziness of two subjects who were allowed by the hemodialysis staff to eat. Moreover, all subjects had anemia, which could have contributed to the dizziness.

The results show a significant decrease in the duration of dizziness experienced by the patients undergoing hemodialysis following key lime oil inhalation aromatherapy. The exact mechanism of action of inhalation aromatherapy using key lime oil or other scents has not yet been fully studied. In general, however, it has been proposed that the effects of inhalation aromatherapy commence with the absorption of volatile molecules through the nasal mucosa which are transformed into chemical signals. These signals then move towards the olfactory bulb and the limbic system via the medial olfactory tract, releasing hormones that can cause physiological and psychological effects which may help calm a person leading to alleviation of dizziness.[7,11] This may explain the quicker relief of dizziness of the hemodialysis patients who had inhaled the cotton ball with key lime oil.

There are no available experimental studies on inhalation aromatherapy that specifically investigated key lime oil or other scents of aromatherapy as a treatment for dizziness to compare the results of this study. However, there are experimental studies which investigated the effect of other scents in relieving symptoms like nausea and vomiting but showed conflicting results. A double-blind randomized controlled clinical trial by Yavari on the effect of lemon inhalation aromatherapy among 100 pregnant women with nausea and vomiting demonstrated a significant improvement in the nausea and vomiting of the treatment groups, supporting lemon oil aromatherapy's anti-emetic properties.[7] However, this contradicts the findings of Pasha, who investigated the effect of mint oil aromatherapy among 60 pregnant women with nausea and vomiting for four nights and found no significant differences in the level of nausea and vomiting between the two groups.[12]

There are several limitations of this study. The research was done in only two outpatient dialysis centers in Quezon City. Since the sampling was purposive, the external validity of the study may have been affected. Additionally, variations in the standard treatment protocol for hypotension and other causes of dizziness during hemodialysis between the two hemodialysis centers and/or variation in the initiation of the said protocol among the hemodialysis staff in each of the hemodialysis center may have been different, which might have affected the time it took to alleviate the dizziness of each of the study participants. Moreover, the key lime oil used for this study was imported from another country and thus the exact posology of the product is undetermined. Finally, the participants in the control group, though blinded, may have suspected that the cotton ball presented to them was a placebo due to the absence of any scent.

Nevertheless, the results of this study suggest that key lime oil inhalation aromatherapy, when used properly, may be an adjunct non-pharmacologic treatment in the management of dizziness among hemodialysis patients. Since there is a lack of previous studies on the effects of aromatherapy on dizziness experienced by hemodialysis patients or other population groups, this paper may serve as a reference for future studies with the following recommendations: 1) focus on one outpatient hemodialysis center with multiple branches to avoid variations in the standard treatment protocol to be administered; 2) investigation of the effect of inhalation aromatherapy on other population groups with complaints of dizziness but without any chronic disease; 3) investigation of the short and long term effects of key lime oil inhalation aromatherapy; and 4) the use of locally produced key lime oil inhalation aromatherapy to promote the use of the abundant key lime in the Philippines.

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Factors affecting compliance to home-based exercises among selected community-based rehabilitation patients

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Abstract

Introduction Home exercise programs are part of home-based rehabilitation or self-management for chronic conditions and are typically unsupervised by health professionals. This paper aimed to identify the most common factors affecting compliance to a home exercise program among patients of a community-based rehabilitation.

Methods This study correlated age, gender, civil status and educational background with perceived factors affecting compliance among patients undergoing community-based rehabilitation. A self-generated questionnaire with a 5-point Likert-type scale was used to measure the patient-related, therapy-related and health care factors affecting compliance. Correlation of the demographic characteristics listed with factors affecting compliance was determined using Pearson's r and Spearman rho.

Results Around 90-95% of respondents agreed or strongly agreed with the patient-related, therapy-related and health care system factors listed. Correlating with age, pain was a barrier in achieving goals (r=-0.383). Willingness to do exercises had some correlation with doing the home exercises (r=0.366). Pain was a barrier in doing the exercises among married patients (r = -0.485). Willingness to do exercises at home was weakly negatively correlated with a low educational attainment (r = -0.287). All the correlations were not significant.

Conclusion Compliance to a home exercise program are inluenced by the patient's motivation, pain as a barrier in achieving goals, and accommodating staff. Female gender and single status correlated with better compliance but the correlation was not significant.

Key words: community-based rehabilitation (CBR), compliance, home-based exercise program (HEP)

The effects of exercise-based rehabilitation in improving fitness and functional ability among people with chronic conditions have received considerable attention. These outcomes are very important because they can make a substantial difference in people's lives and in the economy. Home exercise programs are part of home-based rehabilitation or self-management for chronic conditions and are typically unsupervised by health professionals. Therefore, the patients may not be exercising, or they may not be exercising enough, or they may not be sustaining their exercise level long enough to obtain the therapeutic benefit.[1] Chen found

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a clear association between compliance and treatment outcomes. Patients who follow their treatment recommendations more diligently have been observed to experience better treatment outcomes.[2]

However, these studies have failed to recognize that it is the responsibility of patients to be an active participant in their own care. If patients are not compliant with the treatment protocol, it is difficult to confidently establish the effectiveness of the intervention.[3] Despite the importance of compliance in community based-rehabilitation, few researchers have isolated factors affecting the patients' non-adherence to the prescribed home-exercise protocol. In spite of these early observations, there is no clear strategy to improve patient compliance to a home exercise program.[2] It is desirable to carry out surveys of the compliance of patients on home-based exercises.

The purpose of this paper was to identify the most common factors affecting compliance to a home exercise program among patients of the community-based rehabilitation (CBR) of UERMMMCI. In this paper, the investigators introduced a novel method to determine the extent of the problem of non-compliance and why it should be a concern to all healthcare providers. This paper hopes to help not just physical therapists but other health care professionals maintain proper and quality health care.

Methods

This study correlated age, gender, civil status and educational background with perceived factors affecting compliance among patients undergoing community- based rehabilitation in Barangay Malaria, Caloocan City in January and February 2016. A self-generated questionnaire with a 5-point Likert-type scale was used to measure the factors affecting compliance. The relationship of the demographic characteristics listed with factors affecting compliance was determined using Pearson's r and Spearman rho correlation. The study was approved by the Ethics Review Committee of the medical center.

Patients undergoing community-based rehabilitation (CBR) in Barangay Malaria, Caloocan City were recruited by convenience sampling. Those who could understand English or Filipino and gave an informed consent were included, regardless of their medical condition, and whether or not they could read or write.

The study utilized a self-generated questionnaire (SGQ) based on a pilot questionnaire by Howard about the factors affecting patient compliance to home exercise programs assigned to them during CBR.[4] Other studies have supported the validity and reliability of the tool.[5] The questionnaire consists of nine items covering patient-related, therapy-related (degree of behavioral change required) and health care system (unhappy clinic visits) factors. The patient-related factors included psychosocial factors (attitude and motivation), forgetfulness, and history of good compliance. The therapy-related factors were pain/barriers in achieving goals and benefits of following the regimen. Health care system factors were attitude of the physical therapists and ambiance. Subjects answered the tool using a 5-point Likert-type scale: strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1). The investigators assisted the participants in answering the questionnaire.

Mean, median, mode and standard deviation were computed and used to characterize the respondents' answers to the questionnaire. Correlation of the demographic characteristics age, gender, civil status and educational background with factors affecting compliance was determined using Pearson's r and Spearman rho.

Results

Thirty patients were invited to join and 25 agreed to participate in the study. As seen in Table 1, the respondents were in their early to mid-50s; there were more women (3:1); more than half were married and 80% did not reach college. More than 70% were satisfied with the clinic they went to and 65% waited more than 10 minutes to be attended to. Close to 90% of respondents did their home exercises at least three times a week. All patients were aware of the cause of their impairment and 96% were aware of the benefits of exercise on their condition.

Perceived factors affecting compliance to participant's home-based exercise were divided to patient-related factors, therapy-related factors and health care system factors. Around 90% of respondents agreed or strongly agreed with the patient-related factors listed. More than half disagreed that instructions were difficult to follow but 25% agreed. More than 95% of respondents agreed or strongly agreed that pain is a barrier and that there are benefits in following the program. At least 90%

Table 1. Demographic profile of respondents (N = 25).

Characteristics	n (%)
Gender	
Male	6 (24)
Female	19 (76)
Age (yr ± SD)	53.4 ± 19.9
Civil Status	
Single	5 (20)
Married	15 (60)
Widowed	5 (20)
Others	-
Highest educational attainment	
Elementary	10 (40)
High school	10 (40)
Vocational training	-
College graduate	2 (8)
Graduate school	3 (12)
Perception about the clinic	
Satisfied	18 (72)
Unsatisfied	6 (24)
Others	1 (4)
Waiting time before treatment	
Less than 5 minutes	-
5 - 10 minutes	4 (16)
11 - 20 minutes	11 (44)
21 - 30 minutes	5 (20)
More than 30 minutes	5 (20)
Frequency of home exercises	
Daily	15 (60)
Twice a week	3 (12)
Thrice a week	7 (28)
Never	-

of respondents agreed or strongly agreed that accommodating staff and ambiance positively affect compliance. These findings are seen in Table 2.

Table 3 shows that, correlated with age, pain is a barrier in doing the home exercise program (r = -0.383). The other factors that encourage a patient are perception that exercises are helpful (r = 0.293) and the ambiance (r = 0.219), although these are not statistically significant. Table 4 shows that, correlated with female gender, willingness to do exercises (r = 0.366), intensity of exercise (r = 0.289) and clinic staff (r = 0.285) influence a patient to do her exercises although these are not statistically significant. Table 5 shows that married patients are less likely to do their exercises and the factor that influences this is pain as a barrier (r = -0.485). The relationship is not significant. A married patient does not see the benefit of exercise and tends to forget. Table 6 shows that a level of education not beyond high school is weakly negatively correlated with willingness to do exercises (r = -0.287) but is not statistically significant.

Discussion

Patient compliance and satisfaction to their exercise program play an important role in ensuring a successful outcome of community-based rehabilitation. This study attempted to determine the

Table 2. Factors affecting compliance to home exercise program among patients undergoing community based rehabilitation.

Factors	Strongly agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
1. Patient-related factors					
1.1. Psychosocial factors					
• Attitude towards exercise					
• Willingness to do exercise	19 (76%)	5 (20%)	-	-	1 (4%)
• Make time to do exercise	19 (76%)	6 (24%)	-	-	-
• Motivation					
• Motivated when doing the exercise	16 (64%)	8 (32%)	-	-	1 (4%)
• Confident that exercise is helpful	21 (84%)	4 (16%)	-	-	-
1.2. Forgetfulness					
• Exercise is difficult to understand	3 (12%)	3 (12%)	5 (20%)	3 (12%)	11 (44%)
• Enough information about exercise	18 (72%)	4 (16%)	1 (4%)	1 (4%)	1 (4%)
1.3. History of good compliance					
• PT told to follow HEP	18 (72%)	5 (20%)	-	1 (4%)	1 (4%)
• Intensity of exercise is tolerable	16 (64%)	4 (16%)	2 (8%)	2 (8%)	1 (4%)
2. Therapy-related factors (degree of behavioral change required)					
2.1. Pain or barrier is a challenge in achieving goals	20 (84%)	4 (16%)	1 (4%)	-	-
2.2. Benefit of following	20 (80%)	4 (16%)	1 (4%)	-	-
3. Health-care system factors (unhappy clinic visits)					
3.1. Staff/ PT interns are accommodating	21 (84%)	3 (12%)	1 (4%)	-	-
3.2. Pleasant ambiance	19 (76%)	3 (12%)	3 (12%)	-	-

*- None

correlation of age, gender, marital status and educational attainment with perceived patient-related, therapy-related and health care system factors affect compliance to a home exercise program.

Findings that 65% of patients waited 10 minutes or more are similar to other studies showing that long waiting time affected patient satisfaction.[6,7] A small percentage of respondents did not understand the benefits of their exercise program, similar to the results of other studies show that some patients lack understanding and are in need of further explanation about the role of their therapies in a treating their complaints and as well as the value of their clinic visits.[6,8]

Table 3. Correlation of perceived factors and age.

Perceived factors	r	p
Patient-related factors		
Attitude - willingness to do exercise	0.084	0.71
Attitude - make time to do exercise	0.197	0.38
Motivation during exercise	0.134	0.55
Motivation - confident that exercise is helpful	0.293	0.19
Forgetfulness - exercise is difficult to understand	0.222	0.32
Forgetfulness - information about exercise	0.205	0.36
Compliance - PT told me	0.047	0.83
Compliance - intensity of exercise	0.161	0.47
Therapy-related factors		
Pain or barrier challenges	-0.383	0.08
Benefit of following	-0.038	0.86
Health care system factors		
Staff/PT interns	-0.199	0.37
Ambiance	0.219	0.33

Table 4. Correlation of perceived factors with female gender.

Perceived factors	r	p
Patient-related factors		
Attitude - willingness to do exercise	0.366	0.07
Attitude - make time to do exercise	0.123	0.56
Motivation during exercise	0.023	0.91
Motivation - confident that exercise is helpful	0.010	0.96
Forgetfulness - exercise is difficult to understand	0.068	0.75
Forgetfulness - information about exercise	0.132	0.53
Compliance - PT told me	0.289	0.16
Compliance - intensity of exercise	-0.258	-0.21
Therapy-related factors		
Pain or barrier challenges	0.168	0.42
Benefit of following	0.041	0.85
Health care system factors		
Staff/PT interns	0.285	0.17
Ambiance	-0.122	0.56

Table 5. Correlation of perceived factors and married status.

Perceived factors	r	p
Patient-related factors		
Attitude - willingness to do exercise	-0.141	0.50
Attitude - make time to do exercise	-0.148	0.48
Motivation during exercise	-0.250	0.23
Motivation - confident that exercise is helpful	-0.173	0.41
Forgetfulness - exercise is difficult to understand	0.305	0.14
Forgetfulness - information about the exercises	0.000	1.00
Compliance - PT told me	-0.128	0.54
Compliance - intensity of exercise	0.046	0.83
Therapy related factors		
Pain or barrier challenges	-0.485	0.01
Benefit of following	-0.330	0.11
Health care system factors		
Staff/PT interns	0.165	0.43
Ambiance	-0.129	0.54

Table 6. Correlation of perceived factors with elementary and high school level of education.

Perceived factors	r	p
Patient-related factors		
Attitude - willingness to do exercise	-0.287	0.16
Attitude - make time to do exercise	-0.153	0.47
Motivation during exercise	-0.131	0.46
Motivation - confident that exercise is helpful	0.000	1.00
Forgetfulness - exercise is difficult to understand	-0.185	0.38
Forgetfulness - information about exercise	-0.031	0.88
Compliance - PT told me	-0.029	0.89
Compliance - intensity of exercise	0.182	0.38
Therapy-related factors		
Pain or barrier challenges	0.129	0.54
Benefit of following	-0.100	0.64
Health care system factors		
Staff/PT interns	-0.100	0.64
Ambiance	0.029	0.89

In this study, majority of the respondents were middle-aged and elderly; results show that older patients were more likely to comply with HEP and the factor that affected their compliance is perceived pain. Minor and Dobkin showed that worsening pain during exercise was a barrier to adherence with exercise though there was conflicting evidence that age and greater pain at baseline were barriers to treatment adherence.[9,10] Other studies did not find age to have an effect on patient's adherence to home exercises.[11]

The results show that female patients were more likely to be willing to do the exercise, consistent with previous studies.[12-14] Since the study was being implemented in a community setting, many women were housewives and tended to have more time to do exercises. Murcia noted that the reasons of most women were those related to health, the release of accumulated energy and personal image.[15] The same study showed that women exhibited more positive attitudes towards physical activities that emphasized appearance, improved health and social relations.[15] This means that women are more likely to value a healthier life this is why in turn, they tend to be willing to do the exercises. However, according to Yap, males tend to show an affective attitude towards exercising as well as exercise intention compared to women but women tend to lead a healthier lifestyle than men.[16]

With regard to marital status, the results show that a higher percentage of single patients tended to comply with their home exercise program since they have more time than the married patients. According to King, the transition from a married to a single state did not affect physical activity relative to remaining married.[17] In contrast, the transition from a single to a married state resulted in significant positive changes in physical activity relative to remaining single throughout the study. Other studies showed that another factor that greatly affects the patient is that married patients do not see the benefits of exercise in their life.[18] They also tend to forget the exercise due to complexity and due to difficulty to initiate the exercise.

Majority of the respondents reached elementary or high school only. The results show that the higher the educational attainment the participants had, the lower the tendency not to comply with the home exercise program. These results may be explained by McNamee who showed that people who do not have high school degrees are more likely to be engaged in occupational physical activity at their jobs and people with a college degree are more active on weekends than on weekdays.[19]

Based on the results of the study, the investigators conclude that: 1) motivation towards therapy, pain/ barrier as a challenge to achieving goals, and accommodating staff play a major role in influencing a patient's compliance; 2) gender plays a minimal role in having willingness to exercise; and 3) a patient's civil status greatly affects the compliance of the patient to his exercise regimen. Single patients tend to comply more with their home exercise program than their married counterparts. Given the findings, the investigators recommend a qualitative study to explain why such factors affect compliance.

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Knowledge and attitudes towards evidence-based practice among clinical physical therapists in Metro Manila

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Abstract

Introduction The study aimed to determine the demographic profile of clinical physical therapists in Metro Manila, their knowledge and attitudes towards evidence-based practice and the relationship of their educational background to knowledge and attitudes towards evidence-based practice.
Methods A quantitative correlational research design was utilized to describe the profile, knowledge and attitudes of clinical physical therapists, selected by purposive sampling, towards evidence-based practice. An adapted Likert-type questionnaire was utilized to gather data necessary to the study.
Results Majority of 33 respondents had their basics of evidence-based practice as part of their academic preparation and had positive attitudes towards evidence-based practice. There was a weak non-significant correlation of educational background with knowledge of evidence-based practice and no correlation with attitudes towards evidence-based practice.
Conclusion Educational background may be factor in terms of knowledge of evidence-based practice. However, educational background is not correlated with the personal attitudes towards evidence-based practice.

Key words: Evidence-based practice, knowledge, attitudes, physical therapy, clinical physical therapists

In recent years, there have been few studies supporting the use of evidence-based practice (EBP) among physical therapists. The use of EBP helps determine the effectiveness of the caregiver's interventions or outcome measures. In 2012, Manske and Lehecka concluded that practicing evidence-based medicine (EBM) helped the sports physical therapist deal with the increasingly insurmountable growth of medical literature that is published and EBM allowed clinicians an avenue for excellence and development in clinical practice. According to Sackett clinical research is an important factor in clinical decision-making and practice. Their group noted that both clinician expertise and clinically relevant research were important components of EBP.[2]

However, this view is challenged by recent data showing 61% of the respondents disagreeing on the use of evidence-based practice because of the unreasonable demands on them. The respondents were diverse in their knowledge and attitudes about

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whether or not there was a lack of strong evidence to support aspects of their physical therapy practice.[3] Also, recent graduates demonstrated better knowledge of evidence-based practice skills compared with therapists with 6 to 15 years of clinical experience.[4] However, all groups used clinical experience most frequently as their source of information for clinical decisions. Likewise, research evidence was infrequently included in decision-making. Therapists may employ some interventions simply because they are in widespread use. They may also elect to use interventions because they are new and different or because they are the focus of "anecdotal testimonials" in continuing education. The analysis of research evidence paired with the physical therapist's experience and expertise provides a powerful tool to guide clinical decision-making.[5] There are areas of practice in physical therapy that lack rigorous examination and evidence.

This paper hoped to gauge the knowledge and attitude of physical therapists regarding evidence-based practice and whether or they use EBP in the clinical setting to give the best intervention and decision-making for their patients. The purpose of this study was to determine the knowledge and attitudes regarding evidence-based practice and to determine the relationship of educational background of physical therapists to their knowledge and attitude towards EBP.

Methods

A correlational study using a survey questionnaire analyzed the relationship between clinical physical therapists' educational background and their knowledge and attitudes towards EBP. Clinical physical therapists that treated/managed patients and had working hours in a clinical, hospital or home setting were recruited by purposive sampling. Those who signed an informed consent were included. The investigators used a survey tool adapted from the questionnaires made by Jette and Gorgon.[6] The questionnaire consisted of questions on knowledge, attitudes and practice of EBM with a 5-point Likert-type scale (strongly agree, agree, neutral, disagree, strongly disagree). The questionnaire was pilot tested among licensed physical therapists of the College of Allied Rehabilitation Sciences in the University of the East Ramon Magsaysay Memorial Medical Center.

The subject's profiles were outlined using descriptive statistics mean, median, mode and standard deviation. Meanwhile, the relationship between profile and knowledge, and profile and attitudes were analyzed using Spearman's rho. The statistical level of significance was set at $p < 0.05$.

Results

Thirty three physical therapists that satisfied the inclusion criteria and gave their consent were included in the study. Their characteristics are shown in Table 1. More than 75% of respondents were women and in their middle 20s. Around two-thirds were taking up a masteral program in Physical Therapy. The subjects worked at an average of 41 hours per week and managed around seven patients per day. Majority worked in a privately-owned facility or general hospital treating mostly adult patients with orthopedic conditions or stroke.

Table 1. Characteristics of the participants.

Variable	n= 33
Age (yr ± SD)	26.5 ± 4.66
Gender	
Male	8 (24%)
Female	25 (76%)
Years of practice	3.8 ± 3.12
Entry level degree	
Certificate	
Baccalaureate	33 (100%)
Masters	
Doctorate	
Highest degree attained	
Baccalaureate	13 (39%)
Baccalaureate with earning units related to PT	20 (61%)
Baccalaureate with earning units not related to PT	
Masters degree in PT	
Masters degree not related to PT	
Doctorate	
Number of hours working per week	41.6 ± 7.36
Number of patients per day	7.0 ± 3.08
Type of facility	
Generalized facility (hospitals)	12 (36%)
Specialty facility	
Privately owned facility	20 (61%)
School-based facility	1 (3%)
Community-based facility	

Number of PT in facility	7.24 ± 3.19
Type of condition for majority of patients	
Orthopedic	18 (55%)
Neurological	14 (42%)
Cardiovascular	1 (3%)
Pediatric	
Others	
Age of majority of patients treated	
Pediatric	28 (85%)
Adult	5 (15%)
Geriatric	

As seen in Table 2, 70% of the respondents reported that they learned the foundation of EBP as part of their academic preparation. Sixty-one percent of the respondents learned critical appraisal of research literature in college. Less than half of the respondents had formal training in search strategies. More than 70% were confident of their critical appraisal skills and their ability to find relevant evidence to answer clinical questions. Table 3 shows that 80 to 97% of respondents showed positive attitudes towards EBP in terms of its necessity in the practice of physical therapy, usefulness of research in practice, increased use of evdience, interest in improving EBM skills and that EBM improves the quality of patient care.

There was weak and non-significant correlation between educational background and the different aspects of knowledge of EBM, as seen in Table 4. The correlation between educational background and formal training in search strategies was weak but significant. Table 5 shows no correlation between educational background and personal attitudes towards evidence-based practice among the physical therapists sampled.

Table 2. Personal knowledge towards evidence based practice among the participants.

Variable	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Learned EBP foundation in the undergraduate as academic preparation	8 (24%)	15 (46%)	9 (27%)	1 (3%)	
Learned critical appraisal of research literature in the undergraduate as academic preparation	5 (15%)	15 (46%)	11 (33%)	2 (6%)	
Received formal training in search strategies in the clinics	5 (15%)	10 (30%)	17 (52%)	1 (3%)	
Confidence in appraisal skills	9 (27%)	15 (46%)	8 (24%)		
Confidence in answering clinical questions using relevant research	10 (30%)	14 (42%)	8 (24%)	1 (3%)	

Table 3. Personal attitudes towards evidence based practice among the participants.

Variable	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
EBP's necessity to practice	22 (67%)	10 (30%)	1 (3%)		
Research usefulness in everyday practice	14 (42%)	14 (42%)	5 (16%)		
Increase use of evidence in daily practice	11 (33%)	18 (55%)	4 (12%)		
Interest in learning or improving skills	19 (58%)	11 (33%)	3 (9%)		
Improves quality of patient care	15 (46%)	14 (42%)	4 (12%)		
EBP's account for limits of practice setting	4 (12%)	16 (49%)	11 (33%)		
EBP's help in decision making	2 (6%)	12 (36%)	15 (46%)	2 (6%)	
Lack of evidence to support interventions	6 (18%)	17 (52%)	10 (30%)	4 (12%)	
EBP's account for patient preferences	3 (9%)	8 (24%)	18 (55%)	4 (12%)	

Table 4. Correlation of educational background and personal knowledge towards evidence based practice among the participants.

Variable	r value	p value
Learned EBP foundation in the undergraduate as academic preparation	0.282	0.11
Learned critical appraisal of research literature in the undergraduate as academic preparation	0.282	0.10
Received formal training in search strategies in the clinics	0.371	< 0.01
Confidence in appraisal skills	0.021	0.91
Confidence in answering clinical questions using relevant research	0.215	0.23

Table 5. Correlation of educational background and personal attitudes towards evidence based practice among the participants.

Variable	r value	p value
EBP's necessity to practice	0.067	0.71
Research usefulness in everyday practice	0.053	0.77
Increase the use of evidence in daily practice	-0.091	0.61
Interest in learning or improving skills	0.096	0.59
EBP's improve quality of care	0.122	0.50
EBP's account for limits of practice setting	0.014	0.94
Lack of evidence to support interventions	0.183	0.31
EBP's help in decision making	0.214	0.23
EBP's account for patient preferences	0.007	0.97

Discussion

This study's findings are similar to the results of Jette that engagement in educational sessions either in undergraduate preparation or through continuing education, knowledge on search strategies and confidence in skills and ability to critically appraise information were associated with the age, years since licensure and both professional and advanced academic degrees.[3] The results show that majority of the respondents learned the foundation of EBP and critical appraisal as part of their academic preparation. In contrast, the study of Gorgon showed that content relevant to EBP was incorporated in the various foundation and professional courses of which at least 50% were under research methods and undergraduate thesis.[6]

The results showed that the respondents have a positive attitude towards EBP, similar to the findings of Knops.[7] A survey showed that slightly more than half of the respondents disagreed on the lack of evidence to support the most used interventions in their practice.[8] The integration of evidence from literature helped them improve their skill and decision-making to provide a better quality of patient care. The respondents exhibited high interest and willingness to advance skills relative to EBP. The findings were supportive of a study by Akinbo, wherein the respondents believed that incorporating EBP into practice lead to an enhanced quality of service and developed clinical skills.[9] According to Schreiber, despite their willingness, most of physical therapists still tend to use the information they acquired during entry level education and rely on personal experiences and "expert" opinions instead of the information gathered from new studies and literature.[10]

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The effect of Just Dance Kinect™ on the attention span of selected college students

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Abstract

Introduction This study determined the effect of Just Dance Kinect™ on the attention span of selected college students in the UERMMMCI College of Allied Rehabilitation Sciences.

Methods Study subjects underwent a two-week intervention by playing Just Dance Kinect™ for ten minutes each session thrice a week. The pre- and post-intervention attention span scores were determined using the Repeatable Battery for the Assessment of Neuropsychologic Status and compared.

Results There was a significant 8-point increase in the Repeatable Battery for the Assessment of Neuropsychologic Status attention span scores of 30 participants after two weeks of intervention with Just Dance Kinect™. No adverse events were reported by the participants.

Conclusion Just Dance Kinect™ appears to be potentially beneficial in improving attention span among college students.

Key words: Just Dance Kinect™, exer-gaming, attention span, Repeatable Battery for Neuropsychological Status (RBANS)

With the advent of modern day technology, sharing of knowledge has become more convenient and easily achievable with the use of interfaces or computerized training applications. However, computer-based training currently lacks the ability to monitor human behavioral changes, amidst reports on how these technological advances impact on the psychosocial dimensions of man.[1] Among these behavioral and psychosocial variables which appear to be influenced by computer technology is the attention span of individuals, defined as the concentration of awareness on some phenomenon to the exclusion of other stimuli.[2] Others have suggested that high level aerobic activities, for example during exer-game play, increase attention span and subsequently improve cognitive functioning.[3] In addition, Kinect-based learning activities allegedly support multiple physical engagement patterns, and consequently allow individuals to utilize a larger spectrum of their multiple intelligences.[4] In spite of these early observations, the specific effect of exer-gaming, specifically Just Dance Kinect™, on the cognitive ability of attention has remained unclear, and there is paucity of literature on the exact mechanism on the causal relationship of these two variables.

This study investigated the effect of Just Dance Kinect™ on the attention span of selected students from the College of Allied Rehabilitation Sciences of the University of the East Ramon Magsaysay Memorial Medical Center, Inc.

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Methods

This was a one-group longitudinal (i.e., pre-intervention and post-intervention quasi-experimental) study that looked into the effect of Just Dance Kinect™ on the attention span of selected students of the UERMMMCI College of Allied Rehabilitation Sciences (CAReS) in Academic Year 2015-2016. Potential subjects were screened with a questionnaire and those who consented and qualified underwent the Just Dance Kinect™ exercises for two weeks. Attention span was measured using the Repeatable Battery for Neuropsychological Status (RBANS). Pre- and post-intervention scores were determined and compared.

Male or female Level II and III students enrolled in the BS Physical Therapy and BS Prosthetics and Orthotics for the second semester of Academic Year 2015-2016 who had not played Just Dance Kinect™ within the past two months, could tolerate computer projector exposure for at least ten minutes without experiencing nausea/vomiting or feeling of uneasiness or discomfort, were recruited by purposive sampling. Those who gave their consent and/or assent were included. Sample size was estimated at 30 subjects based on a previous study.[5] A self-administered questionnaire, reviewed and approved by the faculty, was used to screen for eligible study participants.

Prior to the actual testing, an orientation for the study participants was conducted by the investigators. All procedures were carefully explained to the study subjects, including an introductory session on Just Dance Kinect™, mechanics of actual intervention such as the duration of each session, number of sessions, and other details, and schedule of measurement of attention span levels using the RBANS. Study subjects were also instructed to report any and all unwanted or adverse effect/s associated with the use of Just Dance Kinect™. In such instances, study subjects were directed to the UERM Memorial Hospital for further evaluation and management. All subjects were given the opportunity to confer with the investigators for all their concerns, related to the study protocol.

All study participants were subjected to the RBANS, specifically digit span and coding, to determine their baseline attention span. The RBANS was administered by a single licensed clinical psychologist. The test was conducted for about 25 minutes per participant, in a room with temperature regulated at 18ºC, in compliance with the International Fitness Association requirements. To ensure adequate lighting, 16 fluorescent ceiling lamps were switched on in the testing room. School tables and chairs were provided in the examination room, and study participants occupied seats two to three meters apart from each other. The whole RBANS exam was administered, despite the fact that the only part being evaluated was the attention span.

Two weeks after determination of baseline RBANS attention span levels, participants started playing the Just Dance Kinect™ game inside a room with eight fully lit fluorescent ceiling lamps, two air-conditioning units maintaining a temperature of 18ºC, an LCD unit with a projector screen, and with one facilitator. All windows were covered and chairs were moved to the side to prevent distraction and obstruction during the session.

The session involved four participants simultaneously playing Just Dance Kinect™ given 3 feet of space from each other using the Kinect™ sensor projected to a screen. Each session lasted ten minutes, involving two songs at a time, with a one-minute rest period. The participants stood ten feet away from the projector screen, which was more than the recommended minimum distance of 6 feet. There were three sessions in one week.

For the first three sessions, the difficulty level of the songs were "easy", while the following two sessions were at a difficulty level of "medium", and the last session was at a difficulty level of "hard". In addition, participants were restricted from eating 2 hours before playing the game and were not allowed to engage in any other similar video game (e.g., exer-gaming) for the duration of the study. All participants were subjected to the same/controlled environmental conditions throughout the study.

After two weeks of intervention, the participants were reassessed using the same tool. The post-intervention RBANS was administered in the same manner as the baseline determination under the conditions previously described. The same clinical psychologist scored and interpreted the RBANS. A paired t-test was used to determine the significance of the difference between the pre- and post-intervention scores, with the level of significance set at 0.05

Results

From the target population, 55 students were purposively sampled; 30 met the inclusion criteria and were recruited to participate. Their mean age was 19.2 years and the male - female ratio was 2:3, as seen in Table 1. There was an 8-point increase in the mean RBANS scores after the intervention and the difference from the baseline was significant, as seen in Table 2. No adverse events were reported by any of the participants.

Table 1. Sociodemographic profile of study subjects (N = 30).

Variables	Study Subjects
Age (yr), X ± SD	19.2 ± 0.71
Gender	
Male	12 (40%)
Female	18 (60%)

Table 2. Results of pre-intervention and post-intervention RBANS attention span scores (N = 30).

RBANS, attention span	Mean score
Pre-intervention attention span	98.8 ± 15.32
Post-intervention attention span	106.9 ± 13.15
Change from pre-intervention to post-intervention*	8.1 ± 18.26

* p = 0.02, 95% CI -14.89, -1.25, paired t-test

Discussion

The results were consistent with previous studies, which showed improvement in attention span scores after at least two weeks of intervention using exer-gaming, such as Just Dance Kinect™.[6,7] Exer-gaming was noted to positively impact on attention span, suggesting a direct link between action game play and attention enhancement.[8]

This study focused on a generally younger population, aged 16 to 20 years. In a similar study involving elderly subjects, the same improvement in executive cognitive performance was seen with exposure to kinect-based exercise games.[9] This reflected the potential for exer-gaming to enhance different aspects of intellectual function, including cognition, across a wide age-range of population groups. Despite the short period of intervention, there appeared to be significant improvement in attention levels using the RBANS. However, the exact mechanism as to how this effect came about remains undetermined. This was not part of the scope of this study.

Given the promising result of this study, it appears that exer-gaming may have the capacity to improve attention span. Nonetheless, it should be highlighted also that no long-term follow-up observation was performed to ascertain if there would be any adverse effect associated with the intervention. Similarly, other aspects of cognition - memory, recall, and analysis - were not examined in this study.

Just Dance Kinect™ appears to be potentially beneficial in improving attention span among college students. However, long-term impact of exer-gaming on the various facets and components of cognition, including memory, ought to be evaluated and examined. Likewise, further investigation on various population groups stratified into according to gender, age or socioeconomic status may prove to be informative in better understanding the phenomena in the brain during exer-gaming which result in enhanced attention span.

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The relationship of sleep pattern to fatigue and its effect on clinical decision making among staff nurses

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Abstract

Introduction The purpose of this study was to identify the relationship of sleep quality to fatigue and its effect on the clinical decision making of staff nurses.

Methods This study correlated the effect of sleep quality and fatigue on the clinical decision making among staff nurses at the UERM Memorial Hospital using the Pittsburgh Sleep Quality Index, Fatigue Assessment Scale, and Clinical Decision Making in Nursing Scale for sleep quality, fatigue and clinical decision making, respectively. Spearman rho coefficient was computed to determine the relationship between sleep quality and fatigue, and between sleep quality and clinical decision making. The chance of poor clinical decision making among nurses with and without fatigue were computed.

Results Twenty-eight nurses were included in the study, of which 75% had poor sleep quality, 25% suffered from fatigue and one of five had good decision making. The chance of fatigue among nurses with poor sleep quality over the chance of fatigue among nurses with a good quality of sleep is one (OR = 1.0). The chance of good decision making among nurses with fatigue over the chance of good decision making among nurses without fatigue is two out of five (OR = 0.18). Spearman rho shows a moderate, significant correlation between the Fatigue Assessment Scale and Pittsburgh Sleep Quality Index scores ($r = 0.547$, $p < 0.05$) and a weak, non-significant correlation between Clinical Decision Making in Nursing Scale and Pittsburgh Sleep Quality Index scores ($r = 0.151$, $p = 0.44$).

Conclusion Poor sleep quality is moderately correlated with fatigue but it may not necessarily translate into poor decision making among the staff nurses in the study. Fatigue decreases the chance of good decision making by 80%.

Key words: Sleep quality, fatigue, clinical decision making

Over the past decade, the increasing complexity of clinical nursing has necessitated more informed decision making to ensure effective and safe practice.[1,2] Nurses are increasingly regarded as key decision makers within the healthcare team. They are also expected to use the best available evidence in their judgments and decisions.[3] However, according to statistics, there were 2.7 million nurses in America, and a new survey of more than 3,300 of them found that nurses are stressed, overworked, underappreciated, and underutilized. Sixty-four percent said they rarely get seven to eight hours of

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sleep per night, and 31 percent said they get enough sleep just two to three nights a week. The lack of sleep may affect their concentration and mood resulting in changes in their clinical decision making.[4] Studies have shown that nurses who worked long hours and lacked sleep had an increased risk of committing medical and medication errors.[5-7]

The aim of this study was to determine the relationship of sleep quality and fatigue with clinical decision making among nurses. Specifically, the study aimed to determine the (1) status of sleep quality and fatigue, and clinical decision making among the respondents; (2) relationship between sleep quality and fatigue; (3) effect of sleep quality on clinical decision making; and (4) effect of fatigue on clinical decision making.

Methods

This study correlated the effect of sleep quality and fatigue on the clinical decision making among staff nurses at the UERM Memorial Hospital using separate standard questionnaires for sleep quality, fatigue and clinical decision making, respectively. The study was approved by the Ethics Review Committee and done in 2016.

Nurses with regular appointments assigned to the Pay or Service Hospital who were willing to participate were recruited. Nurses with supervisory or managerial functions, and those applying for work abroad were excluded. A sample size of 25 nurses was computed based on a 95% level of confidence, standard deviation of 12.71 and 5% error. Five nurses from each ward were randomly selected by fishbowl method from the names of all nurses assigned in a particular ward. Written informed consent was obtained prior to the administration of the questionnaires.

The Pittsburgh Sleep Quality Index (PSQI), a 19-item tool that measures sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances use of sleep medication, and daytime dysfunction was used to measure sleep quality.[8] Each item is scored 0 to 3; the global PSQI score is obtained by adding the component scores. A lower score denotes a healthier quality of sleep. The Fatigue Assessment Scale (FAS), a 10-item questionnaire, was used to measure fatigue.[9] It makes use of a 5-point Likert-type scale: (1) never, (2) sometimes, (3) regularly, (4) often and (5) always. A higher score indicates more fatigue. The Clinical Decision Making in Nursing Scale (CDMNS), a 40-item questionnaire that asked what the respondent would do in a specific clinical situation, was used to measure clinical decision making.10 It was answered using a 5-point Likert-type scale: (A) always, (F) frequently, (O) occasionally, (S) seldom, and (N) never.

Descriptive statistics (mean, standard deviation and proportion) were computed for the respondents' demographic characteristics. Spearman rho coefficient was computed to determine the relationship between sleep quality and fatigue, and between sleep quality and clinical decision making. The chance of poor clinical decision making among nurses with and without fatigue were computed.

Results

Majority of 28 respondents recruited were single female nurses in their middle twenties. Almost two-thirds were assigned in wards in the Service Hospital and more than 75% handled 6 to 15 patients during their tour of duty, as seen in Table 1. Table 2 shows that 75% of respondents had poor sleep quality, 25% suffered from fatigue and one of five had good decision making.

As seen in Table 3, the chance of fatigue among nurses with poor sleep quality over the chance of fatigue among nurses with a good quality of sleep is one (OR = 1.0). Table 4 shows that there is a two out of five (OR = 0.18) chance of good decision

Table 1. Demographic characteristics of respondents (N = 28).

Characteristic	n (%)
Age (yr)	25.7
Gender	
Male	12 (42.9)
Female	16 (57.1)
Civil status	
Single	25 (89.3)
Married	3 (10.7)
Assignment	
Pay	10 (35.7)
Service	18 (64.3)
Number of patients per duty	
1 to 5	3 (10.7)
6 to 10	15 (53.6)
11 to 15	7 (25.0)
16 to 20	3 (10.7)

Table 2. Sleep quality, fatigue and decision making among staff nurses (N = 28).

Factor	n (%)
Sleep quality	
Good (0-4)	7 (25.0)
Poor (≥ 5)	21 (75.0)
Fatigue	
With (≥ 21)	7 (25.0)
Without (1-20)	21 (75.0)
Clinical decision making	
Good (≥ 154)	6 (21.4)
Fair (140-153)	7 (25.0)
Poor (≤ 139)	15 (53.6)

making among nurses with fatigue over the chance of good decision making among nurses without fatigue. Spearman rho shows a moderate, significant correlation between the FAS and PSQI scores ($r = 0.547$, $p < 0.05$). There is a weak and non-significant correlation between CDMNS and PSQI scores ($r = 0.151$, $p = 0.44$).

Discussion

Nurses play a role in the health care team, but fatigued and sleep deprived nurses may put their patients and themselves at risk. Nurses, like all health care professionals, use reasoning and judgment to make decisions. In doing so, they must grapple with irreducible clinical uncertainty. But in managing uncertainty, the modes of reasoning used should encourage more good rather than harm. Previous nursing research has found a relationship between the fatigue associated with longer work shifts and a variety of outcomes. Much of this previous research has focused on the impact of shiftwork and fatigue on performance outcomes, showing that fatigue is greatest during longer shifts and leads to poorer performance when compared with shorter shifts.

Our results showed a moderate significant relationship between sleep quality and fatigue. Nurses may become sleep-deprived due to long working hours and shifting schedules, producing symptoms in some staff.[11,12] However, there was a weak correlation between decision making and sleep quality. It is possible that the respondents had already adapted to the workload and shifting schedules such that they are able to cope with the effects of sleep deprivation and fatigue. Thus, poor sleep quality may not necessarily translate into poor decision making among the staff nurses in the study but fatigue may decrease the chance of good decision making by 80%.

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Table 3. Sleep quality and fatigue among staff nurses.

Fatigue/sleep quality	Poor sleep (PSQI > 5)	Good sleep (PSQI < 5)	Total
With fatigue (FAS > 21)	5	2	7
Without fatigue (FAS < 21)	15	6	21
Total	20	8	28

Table 4. Fatigue and clinical decision making among staff nurses.

Decision making/fatigue	With fatigue (FAS > 21)	Without fatigue (FAS < 21)	Total
Good (CDMNS > 140)	1	10	11
Poor (CDMNS < 140)	6	11	17
Total	7	21	28

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Breast cancer awareness among female non-medical college students in Quezon City

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Abstract

Introduction Breast cancer remains to be a public health problem in the Philippines. This study determined the level of breast cancer awareness among female non-medical students from selected private colleges in Quezon City.

Methods This was a descriptive cross-sectional survey, and data collection was done on a single occasion. The study population was chosen via convenience sampling. The survey asked about the respondents' ideas on awareness, beliefs, perceived personal risk, perceived seriousness, and knowledge of etiology, diagnosis and management of breast cancer.

Results Majority of the respondents associated lifestyle factors (smoking) with the development of breast cancer. Four-fifths regarded Western medicine as a mainstay of treatment, however, a significant proportion believed that breast cancer could be adequately managed and controlled with complementary and alternative treatments. Around 25% of respondents considered themselves at risk for breast cancer and 40% did not know. Close to 65% said that family history was a risk factor. Almost 50% never heard of self-breast examination; of those who knew about it, only 15% practiced it monthly. The respondents had varied answers when asked about the common symptoms and signs of breast cancer. At least two-thirds of respondents said that the treatment for breast cancer includes surgery and radiation therapy. Majority (79.8%) opined that having an education program would increase the level of awareness of the general public.

Conclusion The students surveyed were generally aware about breast cancer, including aspects of epidemiology, diagnosis and management. The study also a revealed a number of misconceptions regarding breast cancer.

Key words: Breast cancer, awareness, knowledge

Cancer ranks as the third leading cause of mortality in the Philippines.[1] The country also has the highest incidence in Asia and is included in the top 10 nations with morbidity and mortality secondary to breast cancer.[2] Specifically, breast cancer ranks as the second most common cancer type after lung cancer, and it is also the most common cancer found in women, contributing 15% of all new cancer cases for both sexes and 8% of all cancer deaths.[3] In addition, breast cancer is noted to have the highest survivability (40%) among the different cancer forms.[1]

In comparison with other countries, cancer survival between European nations and the Philippines shows a large discrepancy for breast

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cancer. The higher cancer survival for European nations is partially attributed to the easier accessibility and prompt definitive diagnosis due to the implementation of organized screening programs, health system structure, and insurance system. These are not evident in the Philippines; hence, the low cancer survival for this malignant neoplasm in the country.[4]

Raising breast cancer awareness among women is deemed the best way to overcome the burden of disease. Awareness goes beyond level of knowledge pertaining to normal breast physiology, but also considers beliefs regarding breast cancer itself (i.e., those who are aware of their personal risk and those who are not) and the perceived seriousness that it conveys to the general public. Also, the lack of proper knowledge on risk factors and symptoms also contributes to the burden of breast cancer. Thus, the dissemination of information pertaining to means of early breast cancer detection is imperative to raise survivability and avoid progression.[5]

The study aimed to determine the proportion of female, non-medical students from private colleges, universities and other academic institutions in Quezon City who had an adequate level of awareness on breast cancer epidemiology and pathology.

Methods

This was a cross-sectional survey of female college students from private schools in Quezon on their perceptions and beliefs about breast cancer with the use of a self-administered questionnaire. The study was approved by the Ethics Review Committee of the medical center.

Female college students, regardless of age and marital status, enrolled in a baccalaureate course not related to the health professions in the participating schools were recruited and randomly selected. Those who signed an informed consent were included. Excluded were those with physical and psychological limitations or had a history of a breast disorder.

A preliminary list containing all the private colleges in Quezon City was made, and each school was contacted. Letters of permission explaining the purpose and nature of the study were given to the respective contacts provided by each school, along with samples of the testing materials. The investigators visited the schools which agreed to participate, with an adjusted target sample size in mind appropriate to the school's population, and selected available students for participation in the study.

The sample size was estimated at 458, with allowance for a 20% dropout.[6] The corresponding quotas were also adjusted according to the size of the school. Colleges with larger populations had a quota of at least 50-60 respondents, whereas only 20-30 participants were recruited from schools with smaller populations. Study subjects were selected via convenience sampling. This was done to ensure proper representation of the different schools.

A data collection tool, patterned after a previously validated scale, was used.[7] It was available in English and Filipino, depending on the preference of the respondent. The instrument consisted of 25 items in varied formats, divided into two main components: the first part described the general awareness and beliefs pertaining to breast cancer and the second part addressed the perceived need for educational intervention. In addition, an initial section on demographic information was added to the existing instrument. Completed questionnaires were carefully scrutinized to detect errors and omissions, and corrected accordingly.

Awareness was defined as the respondent's consciousness of the existence of breast cancer and determined by a specific item in the questionnaire which directly inquired on the knowledge of the subject on the disease entity. Belief was a set of ideas regarding the disease entity perceived as correct; recurring and prominent beliefs were enumerated with a corresponding percentage of the population that subscribed to each specific belief. Alternative belief was any perception or ideation pertaining to breast cancer that did not conform to the scientific nature of the disease. Perceived personal risk was an individual's perception as to the likelihood of developing breast cancer, expressed in percentage; those who perceived a likelihood of developing the disease were further subdivided into the degree of their perceived risk (low, medium, high) and asked to elaborate on their reasons for giving the degree. Perceived seriousness was an individual's perception on the severity of the condition compared with other diseases (e.g., tuberculosis, malaria, HIV infection and AIDS), presented as percentages reporting degrees of seriousness ("most severe" compared to other illnesses, "moderately severe," "just as severe," "not as severe," "don't know," and "do not wish to

respond"). Knowledge was an individual's correct understanding of evidence-based risk factors, screening procedures, and symptoms regarding breast cancer; this was presented as percentages of those who believed each specific item to be "true," "false," or "don't know."

The study used measures of central tendency to summarize the characteristics and demographics of the study population. Ratios and proportions were also used to compare the distribution of the population according to their: 1) awareness of breast cancer as a disease entity; 2) beliefs; 3) perceived personal risk in developing breast cancer; 4) perceived seriousness of the disease; 5) knowledge of various screening procedures; 6) awareness of risk factors; and 7) awareness of symptoms of the disease. Data processing and analysis were done using the Statistical Package for Social Sciences (SPSS), version 22.

Results

A total of 505 female college students officially enrolled in nine private academic institutions in Quezon City participated in this study. Each of the smaller schools contributed 4 to 8% while each of the bigger schools contributed 11-15% of the respondents. The age range of the study subjects was 15-29 years old, with a mean age of 18 years and a mode of 17 years. Students included in the study were enrolled in 27 different courses, with the top three degree programs being 1) BS Hotel and Restaurant Management; 2) BS Accountancy and 3) BS Tourism Management. Almost all the respondents were single.

Overall awareness Majority of the study participants associated lifestyle factors with the development of breast cancer; two-thirds believed breast cancer was partly caused by bad habits, such as smoking (Table 1). One in three respondents thought breast cancer was due to microoganisms and a slightly lower percentage attributed it to improper nutrition. Less than 10% believed that breast cancer was genetic. Most of the respondents (86.5%) were aware of the burden of breast cancer. Three out of 10 respondents claimed to personally know someone afflicted with breast cancer, more commonly a close relative or friend.

As seen in Table 2, four-fifths of respondents regarded Western medicine as mainstay of treatment for breast cancer with the possibility of cure if managed early. More than half appeared knowledgeable of the possibility of metastasis, which was deemed by more than 75% as non-communicable. A significant proportion of study subjects believed that breast cancer could be adequately managed and controlled with complementary and alternative modalities of treatment. Regarding social perception, 11% of respondents considered having breast cancer as a form of social stigma in the community.

Table 1. Summary of beliefs and perceptions of study subjects regarding possible causes of breast cancer.

Possible causes of illness	Agreeing answers n (%)
Bad habits (i.e., smoking)	319 (63.2)
Microorganisms	171 (33.9)
Malnutrition	163 (32.3)
The will of God	39 (7.7)
Sin	26 (5.1)
Spiritual attack from the evil one	14 (2.8)
Others	39 (7.7)
Don't know	65 (12.9)
Do not wish to respond	16 (3.2)

Table 2. Summary of beliefs of study subjects regarding disease progression, behavior, and treatment of breast cancer.

Belief	Yes n (%)	No n (%)	Don't know n (%)	Do not wish to respond n (%)
Is breast cancer curable in a hospital?	409 (81.0%)	15 (3.0%)	73 (14.5%)	8 (1.6%)
Can cancer spread from one breast to other parts of the body?	296 (58.6%)	72 (14.3%)	136 (26.9%)	1 (0.2%)
Is breast cancer curable by a traditional healer?	85 (16.8%)	218 (60.0%)	199 (39.4%)	3 (0.6%)
Is breast cancer contagious?	28 (5.5%)	380 (75.2%)	97 (19.2%)	0

Perceived personal risk and seriousness About a quarter of respondents considered themselves at risk for breast cancer, one-third thought they were not at risk and 40% did not know. Among the 120 participants who believed they were at risk, 10% felt that they were high risk, 25% considered themselves medium risk and another 25%, low risk. More than 45% of respondents considered breast cancer as at least a moderately severe disease and 40% regarded it be equally serious compared with other medical conditions such as pulmonary tuberculosis, malaria or HIV infection/AIDS.

Knowledge and beliefs on risk factors and causes Close to two-thirds of respondents said that family history was a risk factor for breast cancer. They identified older age, not breastfeeding and lack of regular exercise as the main risk factors for breast cancer, as seen in Table 3. Almost 70% of respondents believed that regular and prolonged use of a bra caused cancer. The other top causes were guinea worm infection, physical assault, frequent manipulation/fondling and scratching, as seen in Table 4.

Knowledge and practice regarding screening and early detection Almost half of respondents never heard of self-breast examination (BSE); less than a third of respondents were aware of the importance of self-breast examination. Of those who knew about it, only 15% practiced it monthly. Of those doing BSE monthly, seven of 10 respondents were able to describe the proper technique. More than 75% of respondents said that knowing how to do

Table 3. Summary of knowledge of study subjects on risk factors for breast cancer.

Risk Factor	True	False	Don't know	Do not wish to respond
	Percentages (%)			
Women who have a relative with breast cancer have a higher chance of getting breast cancer	63.4	10.9	23.6	2.2
Breast cancer is more common in older women than younger women	44.8	22.0	30.9	2.4
Breastfeeding does not change the chances of a woman getting breast cancer	37.0	21.2	38.6	3.2
Not exercising does not change the chances of a woman getting breast cancer	29.9	26.9	41.0	2.2
Drinking alcohol does not change a woman's chance of getting breast cancer	22.2	28.9	45.5	3.4
Having more children at a young age lowers the chances of a woman getting breast cancer	15.4	28.9	52.9	2.8
Fat woman have a higher chance of getting breast cancer than slim women	9.7	32.3	54.1	4.0
Early menstrual flow and late menopause increase the chances of a woman getting breast cancer	8.1	24.8	62.4	4.8
Having TB increases a woman's chance of getting breast cancer	5.7	26.7	64.6	3.0

Table 4. Summary of beliefs of study subjects regarding cause/etiology of breast cancer.

Risk Factor	True	False	Don't know	Do not wish to respond
	Percentages (%)			
Always wearing a bra	69.1	13.9	15.4	1.6
Guinea worm infection	37.4	7.3	51.3	4.0
Attack from an enemy	33.5	16.8	45.5	4.2
Prolonged fondling of the breast by a man	33.1	16.6	46.3	4.0
Scratching the breast	30.5	24.8	41.6	3.2
Child biting mother's breast during breastfeeding	27.7	34.3	35.4	2.6
Breast feeding for a long time	23.0	38.0	35.6	3.4
Large breasts	22.2	28.9	45.5	3.4
Putting money under brazier	21.8	38.0	37.0	96.8
Wrath of God	6.3	50.1	33.7	9.9
Small breasts	5.3	39.6	51.1	4.0

BSE would increase the chances of doing it regularly. They also mentioned educational campaigns, written materials and support groups as other factors that would positively influence their chances of doing BSE. They mentioned fear of finding a mass (49%) and lack of knowledge (32%) as the main barriers in performing a BSE. Almost half of the respondents were unaware of the clinical breast examination (CBE) and a number of those familiar with CBE had never undergone the procedure. More than two-thirds of respondents did not know the clinical value of mammography.

Awareness of symptoms The study respondents had varied responses when asked what were the common symptoms and clinical signs of breast cancer, as seen in Table 5. More than half were aware of gross morphological changes in the breast, but around 50% were not aware that dimpling and crust formation in the nipple could also be manifestations of breast cancer.

Knowledge of treatments At least two-thirds of respondents answered that the treatment for breast cancer includes surgery and radiation therapy (Table 6). However, 65% thought that the condition could be treated with medicines for infections.

Education intervention response Majority of the respondents (79.8%) opined that having an education program would increase the level of awareness of the general public. Five strategies for health education were popular among the study subjects as seen in Table 7, including gathering people for a lay forum and public discussion (96%); distribution educational materials, such as books and pamphlets (93.8%); asking breast cancer survivors to give personal testimonies to people (90.9%); use of multi-media, such as television and radio (87.7%); and tapping health experts to discuss breast cancer to community members (83.9%).

Table 5. Summary of knowledge and understanding of breast cancer symptoms among college students.

Sign	True	False	Don't know	Do not wish to respond
	Percentages (%)			
When the breast lump forms a sore	71.3	4.6	23.0	1.2
Swollen breast	66.3	6.9	25.3	1.4
Breast lump that doesn't hurt	61.4	12.1	24.8	1.8
One breast becoming larger than the other	57.8	13.3	27.7	1.2
Redness of the breast that doesn't go away	55.0	6.7	36.4	1.8
When the breast lump ulcerates	53.5	7.9	36.6	2.0
Skin changes on the breast	48.9	12.1	37.2	1.8
Small dimple on the breast	32.1	16.6	48.9	2.4
Crust on the breast nipple	27.3	14.5	54.3	4.0
Inverted nipple	17.4	22.2	55.8	4.6

Table 6. Summary on knowledge of college students of available breast cancer treatment modalities.

Treatment	True n (%)	False n (%)	Don't know n (%)	Do not wish to respond n (%)
Surgery	458 (90.7)	16 (3.2)	27 (5.3)	4 (0.8)
Radiation therapy	329 (65.1)	33 (6.5)	5 (27.3)	5 (1.0)
Medicines to treat infections	328 (65)	47 (9.3)	121 (24)	9 (1.8)
Medicines given by mouth	282 (55.8)	66 (13.1)	150 (29.7)	7 (1.4)
Medicines given through a needle	121 (24)	126 (25)	242 (47.9)	16 (3.2)

Table 7. Summary of proposed and preferred methods of breast cancer education.

Preferred methods	Very good	Good	Not good	Don't know	Do not wish to respond
			Percentages (%)		
Gather people together for health education	77.6	18.4	1.0	2.8	0.2
Have breast cancer survivors teach about breast cancer	67.3	23.6	3.2	5.3	0.6
Distribute educational book or brochure	65.9	27.9	2.8	3.0	0.4
Television and radio programs	62.0	25.7	5.0	6.5	0.8
Have community healers teach about breast cancer	56.8	27.1	6.9	8.5	0.6
Provide information on internet	48.7	34.9	6.3	9.5	0.6
Use video or film	45.9	34.9	8.9	9.1	1.2
Illustrations or plays	42.4	35.0	8.3	13.3	1.2
Teach people songs about breast cancer	17.4	36.8	21.6	22.2	2.0

Discussion

The results showed an 86.5% rate of breast cancer awareness, indicating the possibility of good reception of health education and intervention. This finding was somewhat expected since the respondents were college students; it was assumed higher educational attainment was associated with greater breast cancer awareness level. Others regarded educational attainment as a significant predictor of high breast cancer awareness level, along with significant past medical history and personal contribution to educational and screening programs for malignant neoplasms.[9] However, more than 10% of the respondents did not perceive themselves as having high level of breast cancer awareness. This hinted that there might have been insufficient avenues for breast cancer awareness in their respective schools and living environments. Having an acquaintance or personally knowing a person with breast cancer appeared to increase the level of awareness of this condition. Likewise, exposure to various forms of media contributed to their awareness level.

Majority viewed breast cancer as potentially curable, given the advancement in modern technology and medicine, as well as the availability of resources and treatment modalities in different hospitals. However, some still regarded complementary and alternative medicine as a viable option for breast cancer management. This somewhat reflected certain economic characteristics, general educational background of influential family members, and biopsychosocial/cultural preferences of the study subjects.[10-12]

Only 56.6% of the study subjects realized the metastatic potential of breast cancer, thereby raising the need for more information dissemination on the behavior of the condition. The mere fact that some subjects assumed breast cancer was indeed communicable in nature also highlighted the need to correct misconceptions in this population.

There was generally low perceived personal risk for developing breast cancer among the respondents. Almost 75% were not aware of the risk factors for breast cancer. Thus, many of the respondents could not objectively quantify risk scores due to low level of understanding on breast cancer etiology.[13] Furthermore, of those who stated that they were at risk for breast cancer, almost 60% did not know by how much they were at risk. Thus, there was a good possibility for study subjects to either overestimate or underestimate their actual risk.[6,13]

Less than half of the respondents viewed breast cancer to be a serious medical condition, which might also be compared with other infections of public health importance, like pulmonary tuberculosis, malaria and HIV infection. Others theorized that ethnicity was an important determinant in the level of perception of susceptibility to breast cancer, as well as the gravity and potential catastrophic outcomes of this malignant neoplasm. Beliefs about breast cancer might be culture-bound, as there were noted apparent differences regarding perception among Filipino, Chinese, and Asian-Indian women.[14]

The results revealed the need to discuss the strategy of early detection, as it was surprising how

nearly half of the study population had never heard of the various available screening modalities for breast cancer, including breast self-exam (BSE), clinical breast exam (CBE), and mammography. Various reasons were given for not regularly performing BSE. However, deterrent factors for not doing BSE included undue fear associated with an incidental finding of a palpable breast mass and the implication of additional financial burden to adequately address the breast mass.[14,15] To increase compliance of women to perform BSE, the study subjects recommended having proper demonstration/counter-demonstration of the BSE techniques, as well as engaging women in more awareness and advocacy campaigns for early breast cancer detection.[16-18]

Based on existing clinical practice guidelines and current recommendations of experts, CBE should be done in women aged 20-39 years.[19] Since the study subjects did not belong to this age group, routine CBE during school annual examinations were not performed on these women. The same plausible explanation could be applicable as to why the study subjects were not familiar with mammography. For women less than 50 years of age, mammography appeared to have lower sensitivity and specificity. Likewise, breast cancer in women less than 20 years of age is not common.[20]

Though majority correctly identified advanced age and genetic predisposition/inheritance as non-modifiable risk factors for breast cancer, there were misconceptions regarding other causative and aggravating factors. Others falsely perceived that the prolonged use of undergarments, trauma and accidents, and undue pressure on the breasts predisposed one to have cancer. Others attributed breast tumors to fatalistic circumstances, thereby reflecting the influence of religious and sociocultural factors.

The subjects were able to correctly enumerate some of the more common clinical manifestations of breast cancer, including a palpable breast mass with associated skin and nipple changes and even abnormal nipple discharge. Despite this, many were not able to associate breast cancer and long-term effects of certain hormones, including estogen.[21] Nonetheless, this level of knowledge did not translate automatically to early detection of breast cancer, since most Filipina women often waited for progression of symptoms to more severe states and conditions (e.g., further increase in tumor size) before consulting for medical advice.[1,4] This delayed health seeking behavior of Filipinas might impact on the burden of breast cancer.

Nine out of 10 respondents regarded surgery, specifically mastectomy, as the mainstay of treatment for breast cancer. Two-thirds also regarded radiation therapy as essential in the management of breast cancer. Such perceptions were attributed to personal experiences of the study subjects with their female acquaintances and relatives diagnosed with breast cancer. These findings were consistent with the results of a local study in Metro Manila, which greatly emphasized the role of mastectomy and radiotherapy in the holistic management of breast cancer.[22]

The role of oral and parenteral antibiotics did not appear clear to the subjects. Others assumed chemotherapeutic agents to be synonymous with antimicrobials. This misperception, which was often perpetuated across generations, could result in needless worry and anxiety among patients. Consequently, this might impact on the decision-making of the subjects.

Almost 80% believed that advocacy campaigns, including educational programs and interventions, could significantly increase the level of cancer awareness. This indicated the willingness and receptiveness of the subjects to learn more about breast cancer. Study subjects opined that effective educational campaigns should include holding community assemblies and conducting lay fora for public discussion; sharing of personal experiences of breast cancer survivors; engaging with regular community-based support groups; distribution of educational/teaching materials in communities and schools; and the use of multi-media for information dissemination.

This study documented the level of awareness of college students enrolled in non-medical courses regarding breast cancer. In general, many appeared to be aware of this malignant neoplasm, but a lot of medical misperceptions also surfaced. Given the results, the importance of having sufficient knowledge about breast cancer should be emphasized among young women. In the Philippines, where breast cancer remains to be a major public health problem, promoting early detection of breast cancer and increasing the level of awareness of at-risk population may eventually address the growing burden of this condition.

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References

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Standard journal article
(List all authors when six or less; when seven or more, list only the first three then add et al.)

Francis D, Hadler SC, Thompson S, et al. The prevention of hepatitis B with vaccine: Report of the Centers for Disease Control multi-center efficacy trial among homosexual men. Ann Intern Med 1982; 97: 362-6.

Krugman S, Overby LR, Mushahwar IK, et al. Viral hepatitis type B: studies on the natural history and prevention reexamined. N Engl J Med 1979; 300: 101-6.

Nyland LJ, Grimmer KA. Is undergraduate physiotherapy study a risk factor for low back pain? A prevalence study of LBP in physiotherapy students. Retrieved from: http://www.Biomed-central.com/1471-2474/4/22. 2003. [Accessed August 27, 2011].

Rankin J, Tennant PW, Stothard KJ, et al. Maternal body mass index and congenital anomaly risk: A cohort study. Int J Obes 2010; 34(9): 1371-80. Available from: http://ncbi.nlm.nih.gov/pubmed/20368710. [Accessed August 27, 2011].

Books and other monographs

Personal authors

Adams RD, Victor M. Principles of Neurology. New York: McGraw-Hill; 1981.

Chapter in a book

Corbett S. Systemic Response to Injury and Metabolic Support. In: Brunicardi FC (editor). Schwartz's Principles of Surgery. 10th ed. New York: McGraw-Hill; 2015: p13-50.

Tables

These should be typed on a separate sheet (NOT EMBEDDED IN THE TEXT), numbered with Arabic numerals and accompanied by a title and an explanatory caption at the top. Each table must be referred to in the text and an indication of the preferred position in the text should be given. Other explanatory materials should be placed in footnotes below the tables. All non-standard abbreviations should be explained in the footnotes. Vertical and horizontal rules between entries should be omitted.

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