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Changes in Student Attitudes towards the Elderly Following a Hypertension Education and Screening Event

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Changes in Student Attitudes towards the Elderly Following a Hypertension Education and Screening Event

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David William Martin

PharmD Candidate, Butler University

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ABSTRACT

Objective

To assess student comfort levels and perceptions toward geriatric care after participation in a hypertension screening and education event, and to assess knowledge retention in the elderly participants.

Methods

This multi-phase, survey based study evaluated pharmacy and physician assistant students' comfort levels and perceptions of the elderly. The study also used questionnaires to assess knowledge retention in the elderly at immediate, one-month, and three-month intervals.

Results

Student comfort levels significantly increased and perceptions remained unchanged after participation in the education and screening event. Elderly participant knowledge retention remained at around a 90% correct response rate.

Conclusion

Increasing student interactions with the elderly through direct patient care may enhance their comfort and confidence in caring for this population when students become healthcare practitioners in the future.

INTRODUCTION

An Aging America

The elderly population within the United States continues to grow. Between 2005 and 2050, the elderly population in America is predicted to double,[1] and by 2030, 1 in 4 Americans will be over the age of 65 years.[2] Data published by the Kaiser Foundation suggests that elderly adults use 34% of all prescription medications, and overall prescription use is predicted to rise by 10% each year.[3] The Medicare Modernization Act of 2003 introduced Medicare Part D prescription drug coverage and medication therapy management (MTM) services for Medicare beneficiaries.[4] As such, pharmacists will be expected to play an important role in the continued care for America's aging population, which often presents with unique and increasingly complicated pharmacotherapy regimens as well as challenges to delivering quality care.

Geriatric Education Requirements

It is crucial that future healthcare providers, including pharmacists, are comfortable and knowledgeable treating an elderly population. The Accreditation Council for Pharmacy Education (ACPE) publishes standards that pharmacy schools must meet in order to be accredited to award the Doctor of Pharmacy Degree. Standard 12.1 states that graduates must be able to "provide patient care in cooperation with patients, prescribers, and other members of an interprofessional health care team based upon sound therapeutic principles and evidence-based data, taking into account relevant legal, ethical, social, cultural, economic, and professional issues, emerging social/behavioral/administrative, and clinical sciences that may impact therapeutic

outcomes."[5] Because the aging of America has been defined as a "key societal change",[6] one can infer that the ACPE promotes the inclusion of geriatric training in the pharmacy school curriculum.

Additionally, in 2004 the American Association of Colleges of Pharmacy's (AACP) Center for the Advancement of Pharmaceutical Education (CAPE) published *Education Outcomes*, which were intended to be the goal toward which the evolving pharmacy curriculum should aim. The third outcome involves public health and states that pharmacists must "promote health improvement, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an interprofessional team of health care providers."[7] The elderly population can be considered "at-risk", and health education and screening events promote public health through disease prevention, early recognition, and community engagement.

History of Geriatric Education

The importance of geriatric training and education in pharmacy schools began to be recognized in the 1970's. In 1975, the Millis Commission published *Pharmacists for the Future*, which recognized the growing elderly population and emphasized the need for the pharmacy profession to evolve to meet the needs of the changing health care environment.[8] Four years later, the Center for Human Services, Bureau of Health Professions issued a report with specific recommendations regarding geriatric education and training for pharmacy schools to implement into their curriculum.[9] Through the 1980's federal grants facilitated the growth of geriatric education in all health professions, including pharmacy,[10] and the first certificate program in geriatric

pharmacy practice was established in 1986 at the University of Washington.[11] Since then, more schools have followed by in establishing gerontology and/or geriatric certificate programs and developing didactic and experiential courses in geriatrics. A model geriatrics pharmacy curriculum was developed and published in 1985 as *Pharmacy Practice for the Geriatric Patient*.[12-13]

Attitudes toward the Elderly

The American Society of Consultant Pharmacists published the *Geriatric Pharmacy Curriculum Guide* in 2002, whose pharmacist competency areas can be divided into three categories: knowledge, skills, and attitudes.[10,14] Older patients are a special population, and pharmacists must possess both the knowledge and attitudes, values, and sensitivity in order to meet the pharmaceutical-care needs of these patients.[10] General attitudes of most Americans toward the elderly and aging tend to be negative,[15] and health care professionals' attitudes tend to be the same or worse than the general public.[16] Surveys of health care professionals and students evaluating their attitudes toward the elderly and perceived adequacy of geriatric knowledge reveal widespread stereotypes and misconceptions, as well as major perceived deficiencies in geriatric knowledge.[17,18] Both of these factors result in less than optimal delivery of care to the elderly population.[19] Other studies have found that physicians and nurses perceive the elderly to be "disengaged, unproductive, inflexible, and to have poor functional and mental status."[15,20]

Surveys in the 1980's revealed that pharmacy students' attitudes toward the elderly were generally more positive than that of other health care professional

students.[21] However, in 1991 Croteu and associates reported that many pharmacists often felt under-prepared and frustrated in trying to meet the needs of their elderly patients.[22] Therefore, a major challenge to schools of pharmacy in the 21st century is to prepare students and practitioners to meet the growing pharmaceutical-care needs of the older adult population by increasing geriatric knowledge as well as improving attitudes toward the elderly.

Current State of Geriatric Education

Many schools have incorporated some component of geriatric education into their curriculum, including elderly patient interactions during clinical rotations.[10] For example, the ambulatory care advanced pharmacy practice experience (APPE) rotation at the University of Illinois at Chicago was restructured and required students to provide medication evaluation, counseling, immunization education, blood pressure screening, and risk-level assessment for diverse geriatric populations. This was an outreach educational program sponsored by the college of pharmacy and the state. Evaluative methods were used to assess student achievement of the program's objectives, and results showed that the students who participated developed enhanced communication skills, self-confidence, and a better understanding of health-related issues facing the elderly.[10]

One would assume that increased encounters with the elderly population will improve students' attitudes and perceptions and make them better health care professionals in the future. Winkle and associates studied changes in pharmacy and medical students' empathy scores after a 40 minute workshop during which students

observed and discussed a theatrical performance about the challenges of aging. The study found that empathy scores increased but were not sustained for both the medical and pharmacy students.[23] Schools of pharmacy across the country have incorporated more geriatric education into their curriculum in an effort to increase students' interactions with the elderly.[10] Studies need to be done to assess whether attitudes toward the elderly are improving in today's pharmacy students, who have more interactions with the elderly throughout their course of education.

Butler University College of Pharmacy and Health Sciences

A strong focus on providing care to the underserved has been incorporated into the curriculum as part of the current Butler University College of Pharmacy and Health Sciences' (COPHS) mission and vision.[24] Pharmacy and physician assistant students are encouraged to volunteer with various outreach efforts lead by college faculty. Through volunteering, COPHS students are able to gain a variety of experiences that allow them to improve their ability to work with diverse patient populations. In addition, Butler University COPHS includes geriatric topics in didactic lectures, a geriatric elective, and an advanced pharmacy practice experience focusing in geriatrics. This project aligns with Butler University COPHS' mission by providing pharmacy and physician assistant students the opportunity to volunteer with a geriatric population through participation in a health screening and education event that promotes public health in a vulnerable patient population.

Project Scope

This project is part of a broader health event series that includes health education and screening events covering osteoporosis, hypertension, and diabetes for an elderly population. The health event series was completed in partnership with Shefali Patel, PharmD Candidate, Eliza Dy, PharmD, BCPS and Sarah Nisly, PharmD, BCPS to fulfill the Doctor of Pharmacy graduation requirements. The presented thesis focuses specifically on the hypertension portion of the health event series.

Hypertension in the Elderly

Hypertension is a very common condition that can lead to adverse health effects such as stroke, heart attack, and kidney failure. Hypertension is defined as a blood pressure greater than 140/90mmHg, and overall this condition affects 76 million adults (30%) in the United States.[25] The prevalence continues to increase even as rates of blood pressure control remain low. Almost two-thirds of those persons older than 60 years have hypertension.[26] Prospective, double-blind, placebo-controlled trials show that treatment of this condition has been shown to decrease the incidence of adverse cardiovascular events by 36% in older persons[27] and 34% in those greater than 80 years of age.[28] Current guidelines provide no age over which treatment should be discontinued.[26] As such, hypertension is an important educational and screening topic for this elderly population, and pharmacy and physician assistant students are able to make a significant impact.

OBJECTIVES

The objectives of this study were to (1) assess student comfort levels and perceptions towards the geriatric population before and after participation in the hypertension screening and education event and (2) to assess knowledge retention in the elderly population about the disease state.

HYPOTHESIS

The event took place at Indianapolis Catholic Charities, from which the elderly population was recruited. The elderly participants were "Senior Companions", a group of senior citizens hired by Catholic Charities to care for other seniors in their homes. It was hypothesized that participation in the health event would improve student comfort levels with and perceptions of the elderly. In addition, it was predicted that this health education event would lead to improvement in the elderly participants' knowledge of blood pressure and help them to better manage both their own health and the clients for which they care.

METHODS

The project was approved by the Butler University Institutional Review Board in July of 2012 in accordance with the research principles outlined in the Declaration of Helsinki.[29] In accordance with university policy, the Collaborative Institutional Training Initiative (CITI) Program involving research in human subjects was completed prior to beginning the study.[30] Informed consent was obtained for all student and elderly

participants prior to enrollment, a copy of which can be found in Appendices A and B, respectively. All activities were included under the Butler University Health Education Center Clinical Laboratory Improvement Amendments (CLIA) waiver.

Recruitment

Pharmacy and physician assistant students were recruited through e-mail, word-of-mouth, Facebook®, and preceptor engagement. Students were eligible to participate in the study if they had attended at least their first day of class as a professional phase student in the Butler University COPHS pharmacy or physician assistant programs, and they received credit for Introductory Pharmacy Practice Experience (IPPE) hours, if applicable, for the time spent participating in the study.

Faculty members were recruited through e-mail, word-of-mouth, and personal encounters and were eligible to participate if they held an Indiana pharmacist or physician assistant license.

Elderly participants were eligible for enrollment if they participated in or were affiliated with Indianapolis Catholic Charities, where they already received routine educational sessions. Additionally, participants must have had a valid mailing address to complete follow-up questionnaires.

Project Timeline

A timeline of the project is included in Appendix C. The recruitment phase began in early December and continued until mid-January. A training session was held for student and faculty participants one week prior to the hypertension event, during which the purpose, objectives, and logistics of the project were explained. A review of

hypertension as a disease state, its management, and blood pressure monitoring was also conducted. The PowerPoint presentation used during the training session can be found in Appendix D. The hypertension screening and education event took place at Catholic Charities in downtown Indianapolis, IN on January 31, 2013. This event was the second in a series of three health education events.

Event Details

Upon arrival to the site, students and faculty worked together to register elderly participants, obtain informed consent, and distribute packets containing educational and screening materials. The guidelines as stated in the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7)[31] were used to develop all educational and screening protocol materials. After a brief introduction, the elderly participants were then split into three roughly equal groups. Each group proceeded to a designated station, which included:

(1) An Education Station, where elderly participants received educational information about the disease state, risk factors, prevention, and management. The blood pressure handout (Appendix E) that was included in their packets was discussed, and participants could ask any questions that they had.

(2) A Screening Station, where participants' blood pressure was taken by the students using either manual sphygmomanometers or automatic machines. All students taking blood pressure had completed and passed the blood pressure training program as part of the Butler University COPHS Self-Care course, and a screening protocol was developed to assist the students in the process

(Appendix F). Once the blood pressure was obtained, the elderly participants were counseled one-on-one about their specific results. The entire screening and counseling process was monitored and facilitated as necessary by a physician assistant faculty member and pharmacy resident.

(3) An "Ask the Pharmacist" Station, where elderly participants received information about the Dietary Approaches to Stopping Hypertension (DASH) Diet (Appendix G) and were able to ask pharmacy students and pharmacists any medication-related questions.

Elderly participants were able to rotate between the three stations at their leisure, but it was not a requirement of the study for the participants to be screened for hypertension to participate in the other portions of the event.

Assessing Student Comfort Levels and Perceptions

The primary objective of student comfort levels and perceptions was assessed using written pre- and post-event surveys (Appendix H). The survey questions used to assess student perceptions of the elderly were developed and validated in a study conducted by Reuben and associates in 1998 and published in the *Journal of the American Geriatrics Society*. The objective of Reuben's study was to "develop and validate an instrument measuring attitudes toward older persons and caring for older patients". Study participants included primary care residents, fellows, and faculty. The tool included fourteen items designed to measure general impressions of, perceived value of, distributive justice of societal resources toward, attitudes toward caring for, perceived potential benefits of treating, and personal economic concerns about caring

for older patients. Five of the statements were worded positively, and nine were worded negatively. Researchers found the 14-item instrument demonstrated high reliability, validity, and sensitivity to change among primary care residents. Predictably, attitudes were progressively more positive with more medical training, and those residents with a greater interest in geriatrics scored higher than those less interested.[32]

Lee and associates continued Reuben's work and were able to categorize the fourteen items into four domains: 1) Perceived Social Value of older persons (SV), 2) Medical Care provided to geriatric patients (MC), 3) Compassion toward older people (CP), and 4) Distribution of Societal Resources for older people (RD).[33] While this instrument was developed for and studied in medical residents, fellows, and faculty, it seemed to be an appropriate tool to assess pharmacy and physician assistant perceptions of the elderly. Therefore, the fourteen validated statements were included in the student survey for this project. In addition, student comfort levels with communicating, screening, and counseling the elderly were assessed.

Assessing Elderly Knowledge Retention

The secondary objective of knowledge retention in the elderly participants was assessed with a five item questionnaire (Appendix I) at the completion of the event and at one and three-month intervals. The same questionnaire was used at each point of contact, and it consisted of true/false and multiple choice questions regarding hypertension risk factors, prevention methods, and medical complications. All topics included on the questionnaire were covered during the educational portion of the event.

Statistical Analysis

To assess student comfort levels, median baseline scores were calculated for each category (communicating, screening, and counseling) of comfort. These scores were then compared to median scores on the same categories after the event using Wilcoxan signed rank. A p-value of < 0.05 was set to determine statistical significance. To assess student perceptions, scores on the negatively worded statements were first reversed before being included with the scores on the positively worded statements. An average perception score was then calculated for each student and a median of the average perception scores was then obtained for before and after the event. These results were then compared using Wilcoxan signed rank, with a p-value set at < 0.05 to indicate a significant change.

In addition to assessing overall perception scores, the perception statements were further categorized into the four domains described by Lee and associates.[33] These domains represented different "categories" of perceptions of the elderly and included: Social Value, Medical Care, Compassion, and Resources Distribution. Mean scores were calculated for each domain before and after the event, and they were analyzed using Wilcoxan signed rank with a p-value set at < 0.05.

To assess knowledge retention in the elderly, an overall percent correct score was calculated for each time period (immediately following the event and at one and three months). To date, only immediate and one-month questionnaires have been collected, so the scores were compared using the paired samples t-test to determine significance, which was set at a p-value < 0.05.

RESULTS

Student Demographics

Eighteen students enrolled in the study, fifteen participated in the hypertension education and screening event, and ten completed follow-up surveys. The majority of students were female (72%) and between 20-24 years of age (89%). Full demographic data is shown in Table 1.

Student Comfort Levels and Perceptions

Students were given the survey before and after the event to assess their comfort level communicating with, screening, and counseling the elderly, as well as their perceptions of the elderly using the fourteen validated items developed by Reuben and associates. Table 2 shows the results for the student surveys administered before and after the hypertension event.

For the three comfort level questions, students were asked to rate themselves on a scale of 1-5, with 1 being "not at all comfortable" and 5 being "extremely comfortable". The median baseline student comfort scores were 4 for communication and 3 for both screening and counseling. In the follow-up surveys, students rated themselves as more comfortable communicating with (score of 5), screening (score of 4), and counseling (score of 4) the elderly. These changes were significant for each domain, with p-values of 0.014, 0.037, and 0.01 respectively.

For the perception questions, students were asked to rate their level of agreement with the statement on a scale of 1-5, with 1 being "strongly disagree" and 5 being "strongly agree". The median overall perception score was 3.7 before the event

and 3.6 after event participation; however a p-value of 0.138 indicates this was not a significant change in student perceptions. It was thought that while overall student perceptions did not change student perceptions in one or more of the domains (social value, medical care, compassion, and resources distribution) may have significantly changed after participation in a direct patient care event. However, before and after mean perception scores for each domain showed no level of significant change for any of the four domains. Full results for the four domains of student perceptions of the elderly are presented in Table 3.

Elderly Participant Demographics

Fifty-three elderly persons participated in the hypertension event. Baseline demographics indicate a population predominantly female (96%) and African American (85%) with a median age of 72.5 years. Approximately 51% report a high school or GED diploma as the highest level of education achieved, while 23% and 26% report not finishing high school and some post-secondary education, respectively. Full demographic data are shown in Table 4, and Charts 1-3 display age, gender, and racial demographic information.

Elderly Participant Knowledge Retention

Fifty-three participants completed the day-of-event questionnaire, with an overall correct response score of 90.9%. Twenty-eight participants completed the one-month follow-up questionnaire, with an overall correct response score of 92.1%. Three-month questionnaires will be distributed at the end of April 2013. While knowledge retention was maintained one month after the event, the scores did not increase

significantly, with a calculated p-value of 0.602. Table 5 shows the results for elderly participant knowledge retention.

DISCUSSION

Student Comfort Levels and Perceptions

Students considered themselves to be relatively comfortable communicating with, screening, and counseling an elderly population before the health event. However, post-event data shows students became more comfortable with all three of these areas at statistically significant levels. This increase can be explained by the students having more practice and experience working with elderly patients in a direct patient care setting. On the contrary, student perceptions of the elderly did not significantly change after participation in the event. Even domains such as Medical Care, where one would expect to see significant change after participation in such an event, saw no significant change. It is speculated that little change was seen in student perceptions because all of the students in this study were in advanced phases of their education. No year 1 pharmacy or physician assistant students participated in the hypertension event, and one would expect to see the greatest changes in both comfort levels and perceptions in year 1 students because of their minimal exposure to patient-care in general, including the geriatric population.

Knowledge Retention in an Elderly Population

The elderly population in this study was heavily female and African American. It appears that the knowledge gained by the elderly participants during the hypertension

education event was retained after one-month. The percent correct score on the one-month follow-up questionnaire did not significantly increase when compared to the day-of-event questionnaire. This data differs from a similar previous osteoporosis screening and education event, which saw elderly participants' knowledge retention rates decline slightly with each subsequent follow-up questionnaire (although still not significantly). This result may be due to a greater prevalence of and therefore higher baseline knowledge of hypertension. It may also be due to selection bias of the elderly participants who responded to the one-month follow-up questionnaire to date. Perhaps these patients felt the most comfortable about their knowledge of the disease state and were anxious to return the questionnaire.

Application to Pharmacy Education

The results of this study can be applied to pharmacy education and may aid schools of pharmacy in curriculum modifications to include more geriatric education and interaction. This study demonstrates that exposure to elderly patients over just a few hours can have an impact on student comfort levels when working with this vulnerable and growing patient population. Insertion of a geriatric component into the curriculum, including direct patient care, is key to developing pharmacists that are comfortable and confident in caring for the elderly.

CONCLUSION

The primary objective of this study was to assess students' comfort levels and perceptions toward the elderly following participation in a hypertension screening and

education event. After participation in the event, students were more comfortable working with the elderly and had maintained perceptions of the elderly. The secondary objective was to assess knowledge retention of the elderly participants. While final results are pending, preliminary data suggests that the knowledge gained by the elderly participants was maintained over time. This health screening event provided the students an opportunity to use their clinical knowledge and enhance their geriatric interaction skills, while providing senior citizens valuable health information.

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Appendix (A) – Student Consent Form

Student Consent Form

Research Project: Changes in Student Perceptions toward the Elderly Following a Health Education Series

Investigators: Shefali Patel, PharmD Candidate, David Martin, PharmD Candidate, Sarah Nisly, PharmD, BCPS, and Eliza Dy, PharmD, PGY2

I, _____, hereby consent to participation as a subject in the above named research project, conducted under the direction of the above named person at Butler University. My consent is given of my own free choice without undue inducement and after the following things have been explained to me. By signing this consent form I agree to participate in all required training sessions and health education events.

1. Nature and Duration of Procedures.

The purpose of this study is to investigate the impact of health screening events held at Catholic Charities on November 8th, 2012, January 31st, 2013, and March 28th, 2013. Participation in this study will allow you to participate in various interactive booths with an elderly adult population. Each event will last approximately 1.5 hours. During the event, you will provide educational information and screen and assess patients on the following topics:

- Hypertension
- Osteoporosis
- Cholesterol and Diabetes

You will be trained before each event on proper use of the assessment tools and educational points to cover with the patients. You will be asked to complete a survey on SurveyMonkey before the study begins, after each event, and at the conclusion of the study assessing your attitudes and comfort level working with elderly adults.

2. Potential Risks and Benefits

There are minimal risks associated with this research.

Risk: As part of the cholesterol and blood glucose screenings, blood samples will be collected from patients, which introduces the potential for blood borne pathogens. You will be trained on proper procedures to protect yourself from exposure and protective equipment will be provided.

Your participation may contribute towards our improved understanding of student attitudes and comfort level towards working with elderly adults. Your participation in this project is entirely voluntary. You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with Butler University or any affiliated person(s). Your decision will not result in any loss of benefits to which you are otherwise entitled. If you choose to participate, you may withdraw at any time by notifying the person administering the research session. Upon your request to withdraw, all information pertaining to you will be destroyed. If you choose to participate, all information will be held in strict confidence. Your responses to the questionnaire(s) and blood pressure assessment will be considered only in combination with those from other participants. The information obtained in the study may be published in scientific journals or presented at scientific meetings but your identity will be kept strictly confidential.

I have had the opportunity to ask questions concerning any and all aspects of the project and my questions have been answered. I understand that participation is voluntary and that I may withdraw my consent at any time without prejudice to me. Confidentiality of records concerning my involvement in this project will be maintained in an appropriate manner. When required by law, the records of this research may be reviewed by applicable government agencies. A copy of this written consent has been given to me. I understand that if I have any questions concerning this research, I can contact the Investigator stated below or the supervising faculty member at Butler University.

Appendix (B) – Participant Consent Form

Participant Consent Form

Research Project: Changes in Student Perceptions Toward the Elderly Following a Health Education Series

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I, _____, hereby consent to participation as a subject in the above named research project, conducted under the direction of the above named person at Butler University. My consent is given of my own free choice without undue inducement and after the following things have been explained to me.

1. Nature and Duration of Procedures.

The purpose of this study is to investigate the impact of this health event held at Catholic Charities on November 8th, 2012, January 31st, 2013, and February 28th, 2013. Participation in this study will allow you to participate in various interactive booths with information on osteoporosis screening and education. Each event will last 1.5 hours. During the event, you will have certain body measures assessed, receive educational information, and have the opportunity to ask student pharmacists medication questions. You will also be asked to complete brief questionnaires regarding your understanding of the topic and general questions regarding your age, gender, ethnicity, and education. Afterwards, you will complete an exit survey evaluating your opinion of the event.

2. Potential Risks and Benefits

There are minimal risks associated with this research:

Risk: Blood pressure assessments may cause slight discomfort as the blood pressure cuff is being inflated due to the pressure it exerts on the arm.

Risk: A bone density scan will be performed, which uses ultrasound technology.

Appendix (B) continued

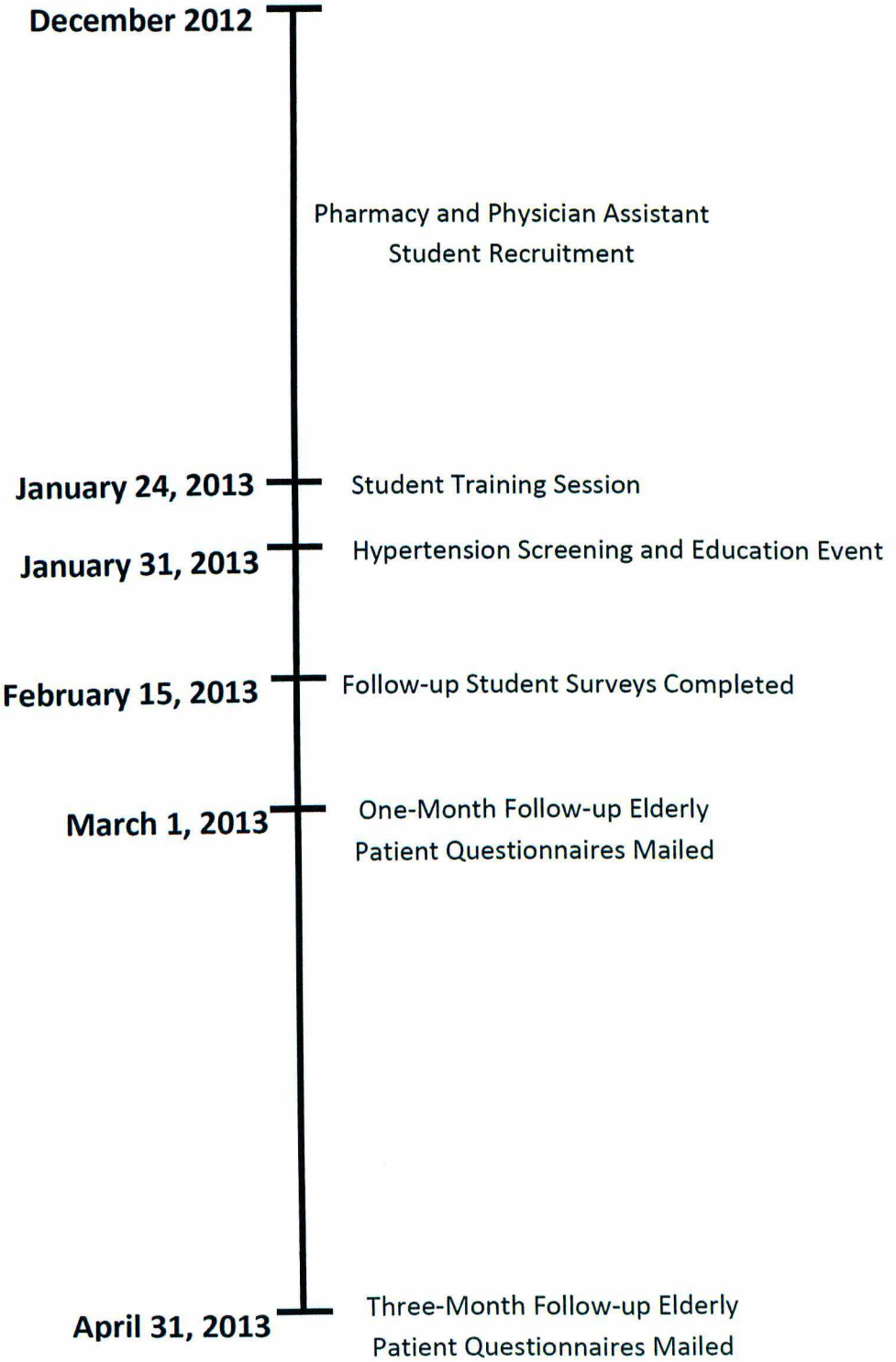
Risk: Cholesterol and blood sugar tests require a finger-stick to obtain a blood sample, which may cause slight discomfort due to the finger being pricked with a small needle.

Appendix (B) continued

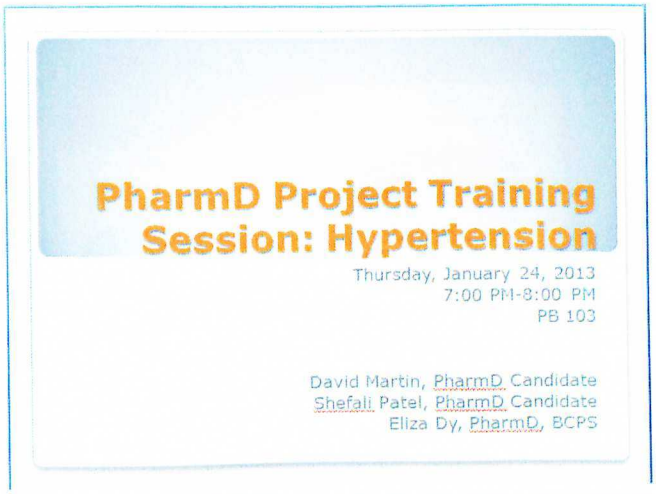
Your participation may contribute towards our improved understanding and proficiency in health fair events in the future. Your participation in this project is entirely voluntary. You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with Butler University or any affiliated person(s). Your decision will not result in any loss of benefits to which you are otherwise entitled. If you choose to participate, you may withdraw at any time by notifying the person administering the research session. Upon your request to withdraw, all information pertaining to you will be destroyed. If you choose to participate, all information will be held in strict confidence. Your responses to the questionnaire(s) and blood pressure assessment will be considered only in combination with those from other participants. The information obtained in the study may be published in scientific journals or presented at scientific meetings but your identity will be kept strictly confidential.

I have had the opportunity to ask questions concerning any and all aspects of the project and my questions have been answered. I understand that participation is voluntary and that I may withdraw my consent at any time without prejudice to me. Confidentiality of records concerning my involvement in this project will be maintained in an appropriate manner. When required by law, the records of this research may be reviewed by applicable government agencies. A copy of this written consent has been given to me. I understand that if I have any questions concerning this research, I can contact the Investigator stated below or the supervising faculty member at Butler University.

Appendix (C) – Project Timeline



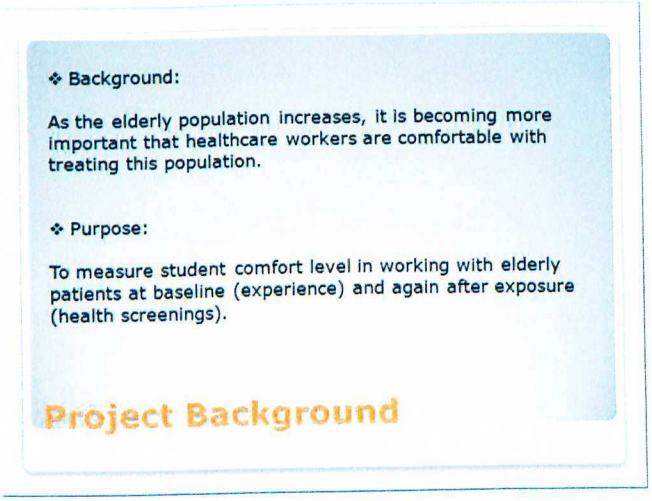
Appendix (D) – Training Session Powerpoint Presentation



PharmD Project Training Session: Hypertension

Thursday, January 24, 2013
7:00 PM-8:00 PM
PB 103

David Martin, PharmD Candidate
Shefali Patel, PharmD Candidate
Eliza Dy, PharmD, BCPS



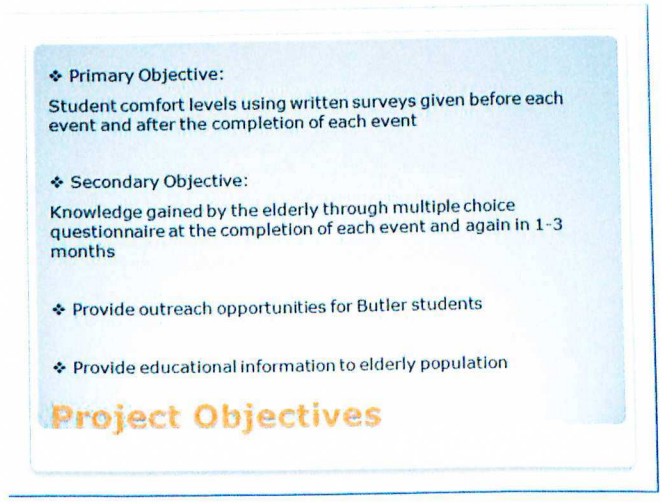
- Background:

As the elderly population increases, it is becoming more important that healthcare workers are comfortable with treating this population.

- Purpose:

To measure student comfort level in working with elderly patients at baseline (experience) and again after exposure (health screenings).

Project Background



- Primary Objective:

Student comfort levels using written surveys given before each event and after the completion of each event

- Secondary Objective:

Knowledge gained by the elderly through multiple choice questionnaire at the completion of each event and again in 1-3 months

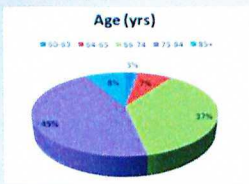
- Provide outreach opportunities for Butler students

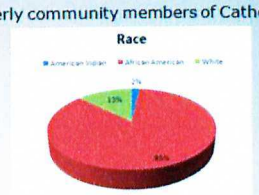
- Provide educational information to elderly population

Project Objectives

Appendix (D) continued

- We will be working with elderly community members of Catholic Charities of Indianapolis
- Demographics:





Project Details

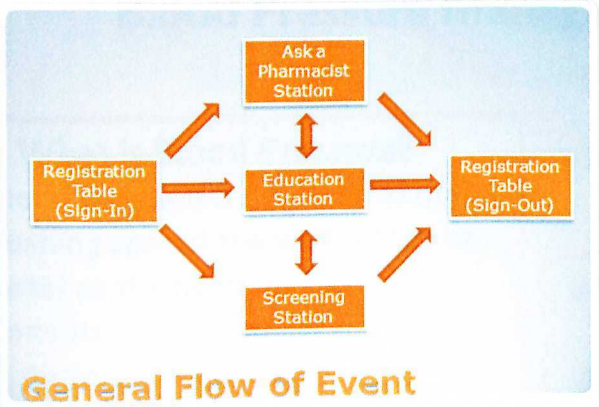
- Series of 3 health screenings
  1.) Osteoporosis - COMPLETED
  2.) **Hypertension – January 31st**
  3.) Cholesterol / Diabetes – February 28th
- Measure changes in student perceptions towards working with elderly following participation in health screenings
- Measure knowledge retention in elderly population throughout health education series

Project Methods

- Volunteer consent forms:
  - Agree to participate in all required training and health education events
  - Will provide educational information and screen patients on osteoporosis, hypertension, and cholesterol/ diabetes
  - Will be trained before each event on proper use of the assessment and educational tools
  - Will be asked to complete a survey before the study begins, after each event, and at the conclusion of the study
  - Risk of exposure to blood borne pathogens during point-of-care testing
    - Will be trained on proper procedures to protect yourself from exposure, and protective equipment will be provided

Volunteer Consent

Appendix (D) continued



- Have patient sit and relax with both feet on the floor
- Things to ask the patient before taking their blood pressure:
  - What does your blood pressure normally run?
  - Are you taking any medication to lower your blood pressure? (if yes, Have you taken your medication today?)
  - Have you had any caffeine this morning?
  - Have you exercised this morning?
- Make sure the cuff is the correct size for the patient
  - The **length** of the bladder should be at least **80%** of the distance around the middle of the upper arm
  - The **width** of the bladder should be **40%** of the distance around the middle of the upper arm
- Take the patient's blood pressure using either manual or automatic and record the reading on the handout

Hypertension Screening

http://www.youtube.com/watch?v=u6saTO8_o2g

- First screening:

  Thursday, January 31st 9:30 AM- 11:30 am

- Location:

Catholic Charities
1400 N. Meridian

Important Information

Appendix (E) – Blood Pressure Education Handout

Blood Pressure Management

What is Blood Pressure?

- Blood pressure is the force of blood pushing against the walls of the arteries as the heart pumps
- Consists of two numbers
  - Systolic (top number)
  - Diastolic (bottom number)

What should my blood pressure be?

- A "normal" blood pressure is <120/80mmHg
- Your doctor will be able to tell you what your individual blood pressure goal is

What Happens if my Blood Pressure Stays Too High?

- Heart attack
- Stroke
- Kidney Failure
- Heart Failure

Ways to Lower your Blood Pressure:

- Limit salt in diet
- Increase physical activity
- Weight loss
- Reduce stress level
- Avoid tobacco
- Medications may be used when diet and lifestyle aren't enough

What Should I Do?

1. Regular check-ups with physician
2. Check your blood pressure at home or in a drug store and keep a record
3. Try to help your blood pressure yourself through diet and activity changes

Appendix (E) continued

Questions for YOU to Answer:

1. Have you been diagnosed with high blood pressure before?

YES NO UNSURE

2. Are you currently taking medication that lowers your blood pressure?

YES NO UNSURE

3. If you answered yes to the above question, please write the names of your medication(s) below if you know them:

_____

_____

My Blood Pressure Reading Today:

DATE: _____

BLOOD PRESSURE: _____

Blood Pressure Screening Protocol

GOAL: To identify persons with blood pressure above goal and who would benefit from blood pressure reduction to minimize risks associated with high blood pressure.

COMPONENTS OF SCREENING:

1. Review potential cardiovascular risk factors
2. Measurement of blood pressure

POTENTIAL CARDIOVASUCLAR RISK FACTORS:

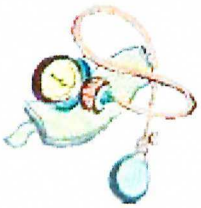
A. Elevated BP , elevated HR
B. Chronic kidney disease (estimated GFR < 60 mL/min)
C. Microalbuminuria (30-300 mg/dL)
D. Smoking
E. Dyslipidemia (High LDL, or non-HDL; High TC; Low HDL; elevated TG)
F. Diabetes mellitus (DM), insulin resistance, or elevated BG
G. Age > 55 years (men) ; age > 65 years (women)
H. Family Hx of CV disease (men <50 yoa; women < 60 yoa)
I. Obesity (BMI ≥ 30 kg/m2)
J. Physical inactivity
K. Psychosocial factors
L. Elevated hs-CRP

MEASUREMENT OF BLOOD PRESSURE:

1. Will be using a combination of automated blood pressure cuffs and sphygmomanometers.
2. While not able to diagnose high blood pressure, the screening will give an assessment of blood pressure to provide participants with a value to discuss with their healthcare provider
3. **Perform the measurement and write the result on patient's blood pressure handout.**
4. **If blood pressure is above patient's goal:**
   > 140/90 for non-diabetic patients
   > 130/80 for diabetic patients and chronic kidney disease patients:
   - Recommend that patient discusses this measurement with their healthcare provider
     - May need to begin taking medications for high blood pressure
     - May need to re-evaluate / therapy if already on medications for blood pressure
5. **If blood pressure is ≥180/110mmHg, wait a few minutes and repeat. If still high, alert David Martin, Eliza Dy, or Sarah Nisly.**

Appendix (G) – DASH Diet Handout

DASH DIET



What is it? **Dietary Approaches to Stop Hypertension** — a low sodium eating plan to reduce the risk of developing high blood pressure or to help lower already high blood pressure

Salt is made of sodium and chloride — sodium in salt contributes to high blood pressure

The DASH diet consists of no more than **2400 mg** of sodium per day and some patients may need as low as **1500 mg** of sodium per day

How to Start:

-make changes gradually
-remove the salt shaker from the table
-choose whole grain foods (bread and cereals)
-treat meat as part of your entire meal rather than the focus of the main meal
-eat fruits and vegetables or foods low in saturated fat as desserts and snacks
-experiment with other seasonings and herbs (oregano, basil, thyme, pepper)
-use fresh, frozen or canned vegetables with no salt added

- The DASH diet is also rich in **fruits, vegetables, magnesium, potassium, calcium and fiber**
- Try using **fat free** or **lowfat dairy** products (skim or 1% milk)

- Results may be seen in **2 weeks**
- Increase **vegetables** and **fruits** slowly to avoid bloating and diarrhea
- Avoid alcohol
- Read **food labels** to choose the **lowest in saturated and trans fat**
- Exercise and weight reduction may also help lower blood pressure

Appendix (G) continued

DASH DIET

The DASH diet is also low in **saturated fat, cholesterol and total fat**

Paying close attention to the *types* of fats you eat can promote a heart healthy diet

• Avoid *bad fats*

SATURATED FATS:

- egg yolks, high fat dairy (whole milk, cheese, butter, ice cream)
- palm oil, coconut oil, kernel oil,
- animal fats (ground meat, beef, pork, chicken skin, salami, sausage), fried food

TRANS FATS:

- processed baked goods (crackers, cookies, cakes, doughnuts)
- french fries, stick margarine, butter, shortening, prepackaged foods

• Replace with *good fats*

MONOUNSATURATED FATS:

- olive oil, canola oil, corn oil, peanut oil
- pumpkin seeds, sesame seeds, avocados
- cashews, almonds, hazelnuts, Brazil nuts

POLYUNSATURATED FATS:

- sunflower seeds, soybeans, safflower, flax oil
- oily fish (king mackerel, sardines, salmon)

With time and patience, you can adopt this eating plan into your everyday routine

For more information and recipes visit: **http://dashdiet.org**

Appendix (H) – Student Survey

Demographic Information

Please circle one for each of the following questions:

i. Program and year in school:

PA1 PA2 Pharmacy 1 Pharmacy 2

Pharmacy 3 Pharmacy 4

ii. Gender:

Male Female

iii. Age:

20-24 years 25-30 years >30 years

Pre-Screening

On a scale of 1 to 5 (1 being "Not at All" and 5 being "Extremely"), please rate how comfortable do you feel with each of the following items:

	1	2	3	4	5
1) **Communicating** with the elderly					
2) **Screening** for hypertension, cholesterol, diabetes, and osteoporosis					
3) **Counseling** elderly patients on hypertension, cholesterol, diabetes, and osteoporosis					

4) What do you anticipate to be biggest challenge in counseling the elderly on hypertension, cholesterol, diabetes, and osteoporosis?

Appendix (H) continued

On a scale from 1-5 (1 being "Strongly Disagree" and 5 being "Strongly Agree"), please indicate the degree to which you agree or disagree.

	1	2	3	4	5
5) Most old people are pleasant to be with.					
6) The federal government should reallocate money from Medicare to research on AIDS or pediatric diseases.					
7) If I have the choice, I would rather see younger patients than elderly ones.					
8) Is it society's responsibility to provide care for its elderly persons.					
9) Medical care for old people uses up too much human and material resources.					
10) As people grow older, they become less organized and more confused.					
11) Elderly patients tend to be more appreciative of the medical care I provide than younger patients.					
12) Taking a medical history from elderly patients is frequently an ordeal.					
13) I tend to pay more attention and have more sympathy towards my elderly patients than my younger patients.					
14) Old people in general do not contribute much to society.					
15) Treatment of chronically ill old patients is hopeless.					
16) Old persons don't contribute their fair share towards paying for their health care.					
17) In general, old people act too slow for modern society.					
18) It is interesting listening to old people's accounts of their past experiences.					

Appendix (I) – Elderly Participant Questionnaire

Name: _____

Phone Number: _____

Hypertension Questions:

1.) True or false: A blood pressure of 160/95 mmHg is a normal.

2.) Which of the following should you limit in your diet to help control your blood pressure?
   A. Dairy
   B. Fruit
   C. Salt
   D. Vegetables

3.) True or false: 30 minutes of exercise on most days of the week can help control your blood pressure.

4.) Which of the following lifestyle changes may improve blood pressure control?
   A. Doing crosswords
   B. Eating more red meat
   C. Stopping smoking
   D. Taking a multivitamin

5.) High blood pressure can lead to which of the following:
   A. Breathing problems
   B. Heart attack
   C. Increased infections
   D. Low blood counts

Table 1 – Student Demographics

Student Participants Demographic Data
Gender
Female (n=13) 72%
Age
20-24yrs (n=16) 89%
25-30yrs (n=1) 5.5%
>30 yrs (n=1) 5.5%
Educational Level
Pharmacy Year 2 (n=11) 61%
Pharmacy Year 3 (n=2) 11%
Pharmacy Year 4 (n=4) 22%
Physician Assistant Year 2 (n=1) 6%

Table (2) – Student-reported median scores of comfort levels and perceptions before and after event participation.

Variable	Median (Interquartile Range)		
	Before	After	P-value
Comfort Level Communicating	4 (3-4.3)	5 (4-5)	0.014
Comfort Level Screening	3 (2-4)	4 (3-4)	0.037
Comfort Level Counseling	3 (2-4)	4 (3-4)	0.01
Perceptions	3.7 (3.2-3.9)	3.6 (3.5-3.9)	0.138

Table (3) – Mean student perception scores before and after participation in the event for each established perception domain.

Perception Domain	Mean (Standard Deviation)		
	Before	After	P-value
Social Value	3.889 (1.06)	3.85 (0.626)	0.739
Medical Care	3.028 (0.722)	3.2 (0.621)	0.615
Resources Distribution	3.583 (0.507)	3.65 (0.444)	0.541
Compassion	3.875 (0.448)	4.075 (0.392)	0.12

Table (4) – Elderly Participants Demographic Data

Elderly Participants Demographic Data
Gender Female (n=47) 96%
Age (yrs) Mean = 72.16 Median = 72.5 Range = 43-95
Race African American (n=40) 85% Caucasian (n=6) 13% Other (n=1) 2%
Educational Level Not finishing high school (n=11) 23.4% High School (n=24) 51% Some post-secondary education (n=12) 25.5%

Table (5) – Elderly participant knowledge retention after participation in the hypertension screening and education event

Overall Percent Correct			
Day of Event	**1 Month Follow-up**	**3 Month Follow-up**	**P value**
90.94%	92.14%	N/A	0.602

Chart (1) – Elderly participant breakdown according to age

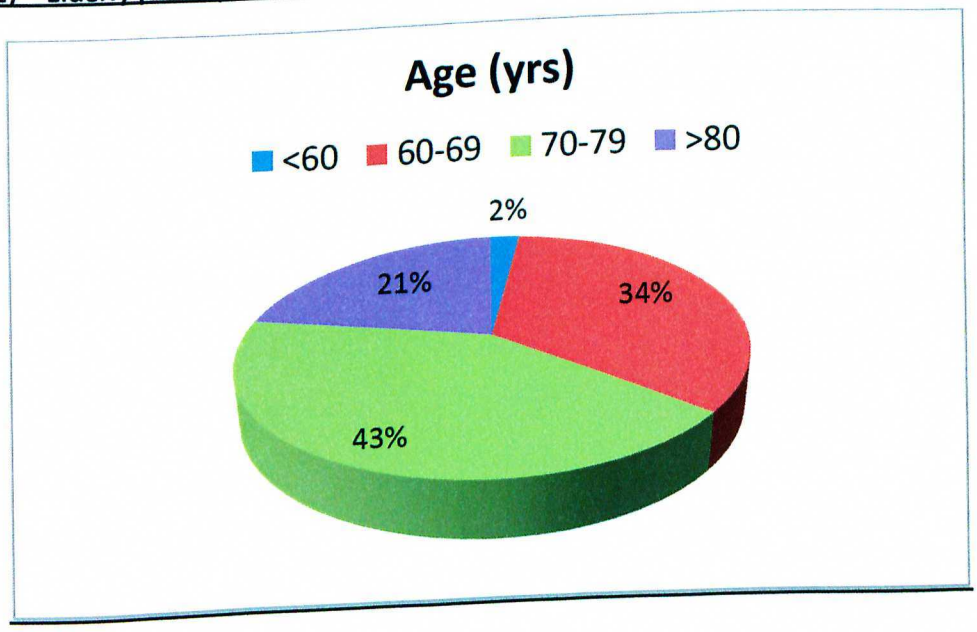


Chart (2) – Elderly participant breakdown according to gender

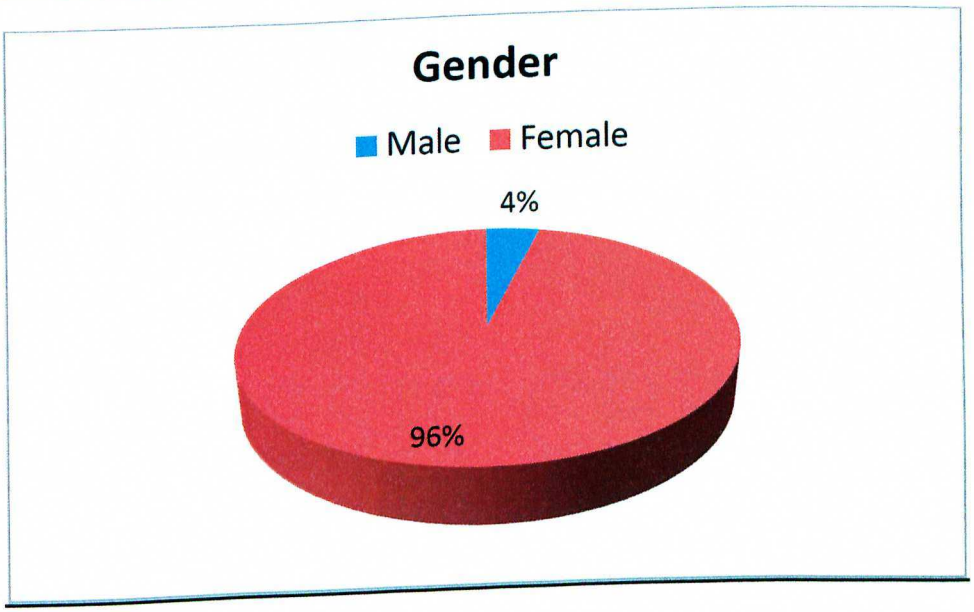


Chart (3) – Elderly participant breakdown according to race