

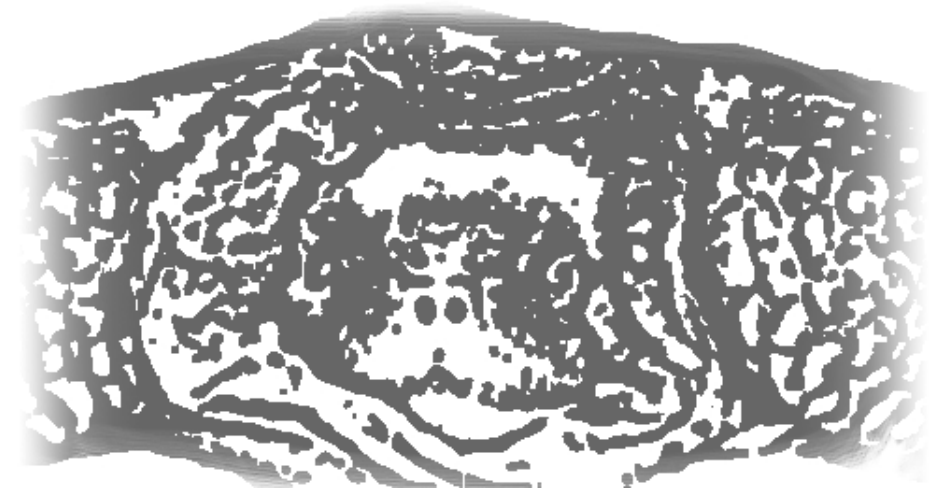


The University of Georgia
GERONTOLOGY CENTER
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Technical Report UGACC-02-002

EXPERT SURVIVORS:

The
**OLDEST
OLD**



**The Thirteenth Annual Southeastern
Regional Student Convention
in
Gerontology and Geriatrics
Symposia, Posters and Keynote Address**

Edited by Mary Walker

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preface

Over the past 13 years, *the Annual Southeastern Regional Student Convention on Gerontology and Geriatrics* has provided students with seminal hands-on experiences from organizing a convention to publishing a monograph. These skills are generally not taught in the classrooms. Gerontology students from the University System of Georgia and elsewhere take advantage of this convention to learn from a variety of student-faculty teaching models, present their research, and establish and form networks across the Southeast.

Students who received seed grants to conduct their research are required to present their results at the Annual Convention with expenses paid. Student travel scholarships are available to poster and paper presenters. Three cash prizes are given each year for the best three student posters at the Convention.

A most important product of the Convention is the publication of the proceedings by students. Students experienced the hands-on peer review and actual publication processes, interaction with the printer, as well as budget and cost control processes. The actual publications are distributed regionally and nationally to publicize the work product. When graduated students do their first job search, the experience of a monograph contributor and editor would be an impressive item on their vita in addition to their other publications and activities.

Eight universities shared their budgets to co-sponsor the Annual Student Convention. The co-sponsors are Armstrong Atlantic State University, Brenau University, Georgia State University, Georgia Southern University, Medical College of Georgia, North Georgia College and State University, State University of West Georgia, and the University of Georgia. The training our students have received has been invaluable. They will bring these acquired experiences to the next steps of their career development.

Leonard W. Poon
Professor of Psychology
Chair, Faculty of Gerontology
Director, Gerontology Center
University of Georgia
Athens, Georgia

foreword

I am grateful for the opportunity to participate in *the Annual Southeastern Regional Student Convention on Gerontology and Geriatrics*. Hearing the presentations, and discovering the diversity in the field was an education in itself, but the opportunity to collect and publish the proceedings was an unparalleled learning experience a classroom could not provide.

The possibilities that occur through group learning are very rich and I thank fellow students, faculty and contributors to the convention for adding so much to this experience. The collaboration of eight universities from across the state provided shared experiences that opened new learning opportunities, fostered professional relationships, inspired research possibilities and created new knowledge. Each participant could take away something new and put it to use in their professional and personal life.

Documenting the scholarship that was brought by contributors not only provides me an opportunity to learn first hand about academic publishing, it gave me a chance to design and cost the production of a book. I participated actively in the peer review process and conducted an editor's meeting. I have shared the writing about research undertaken by many individuals and have shared this information with others. I am especially grateful to contributors, peer reviewers, Gerontology Center staff and faculty and Adult Education faculty who were so generous with their time and support. In addition to the editorial experience I have been privileged to observe the process of staging a convention and even been able to share the experience of turtles who have made me understand through the eyes of researchers that their limited lives can teach lessons in coping with harsh reality and the rigors that life brings.

The printed version of the monograph will extend the effect of the learning community to individuals who had no opportunity to attend but even more significant, the monograph will appear full text on the Gerontology Center web site. Any individual with Internet access will have the opportunity to join the group and the effect of the convention will spread like the ripples across the turtles' watering places. Thank you all.

Mary Walker
Department of Adult Education
University of Georgia
Athens, Georgia

June 2002

symposia contributors



Back row, left to right: Dr. Carol Miller, Carole Hollingsworth, Kelly Fitzgerald, Jennifer Cheong, Leia Richardson, Allison McCamey

Front row, left to right: Chayla Harris, Jo George, Mary MacKinnon, Helen Buckelew Kellie Rogers, Patrice Lomax

Not pictured: Dr. Jill Hayes, Dr. Mary Ann Johnson, Dr. Richard St. Pierre & Dr. Frank Whittington

symposium 1

CONTRIBUTORS

Georgia State University

Dr. Frank J. Whittington is Professor of Sociology and Director of the Gerontology Center at Georgia State University in Atlanta. He received his Ph.D. from Duke University where he was a Research Training Program Fellow in the Center for the Study of Aging and Human Development. He is a Fellow of the Gerontological Society of America and his publications include 8 books, over 40 articles and chapters on long-term care and health behavior of older people. One of his recent books, co-authored with Mary Ball, entitled, *Surviving Dependence: Voices of African American Elders*, is a study of the home care experiences of low-income, older African American. His current research includes studies of independence, autonomy and quality of life of residents in assisted living facilities.

Carole Hollingsworth is a research dissemination specialist, project manager, and research associate in the Gerontology Center at Georgia State University in Atlanta where she received her M.A. degree in sociology in 1991. She is an instructor in the Sociology Department. She is working on a qualitative study for a National Institute on Aging project that focuses on ways to promote independence and autonomy of residents in assisted living homes and has presented her research findings at state, national and international aging conferences.

Mary MacKinnon is the Director of Student Affairs for the Gerontology Center at Georgia State in Atlanta. She is responsible for administering academic programs in gerontology and the coordination of internships. She has a Master's of Nursing from Emory University and a graduate Certificate in Gerontology from Georgia State University. She has been actively engaged in the aging services network, serving on numerous planning committees, advisory councils, and in volunteer capacities. She serves on the board of directors of the Georgia Gerontology Society.

Kelly Fitzgerald is currently a Health Science Specialist at the Rehabilitation Research & Development Center in the Atlanta Veterans Administration Medical Center. She holds a B.S. in environmental development

from Southern Polytechnic State University and Master of Public Administration degree with emphasis on public budgeting and finance from Georgia State University. She is working on a certificate in gerontology at Georgia State University and has been accepted into a Ph.D. program in gerontology at the University of Massachusetts for fall 2002. She is an active member of the Georgia Gerontology Society, the Gerontological Society of America and serves on both organizations student committees.

Patrice M. Lomax is a senior at Georgia State University. Her main concentrations of study are psychology, gerontology and criminal justice. She is currently interning with the Georgia Division of Aging Services where she is working on a grant-funded Elder Abuse Project. In 1999 she was selected student of the year in social sciences at Georgia Perimeter College where she received an Associate's degree.

Dr. Jill Hayes is currently a Professor and Head of the Department of Nursing at North Georgia College & State University. She holds a Ph.D. in nursing administration and two certificates in gerontology. Dr. Hayes has been actively involved in the field of gerontology for the past ten years and has presented regionally, nationally, and internationally on a variety of gerontology related topics.

Dr. Carol Miller is currently an Assistant Professor in the Graduate Program in Physical Therapy at North Georgia College & State University. Her recently awarded doctoral degree from Walden University is in Health and Human Behavior emphasizing Health and the Life Span - Gerontology. Dr. Miller is also recognized by the APTA as a Board Certified Clinical Specialist in Geriatrics with areas of expertise in orthopedics, amputee management, gait analysis, and biomechanics.

Chayla A. Harris earned a B.S. in Biology at Southern University in Baton Rouge. She has trained extensively in classical ballet and has performed in various performances across the country. She is presently a graduate Student at North Georgia College & State University where she is currently pursuing a Master's of Science in Physical Therapy.

Leia Richardson is a 1998 graduate from the University of Georgia with a B.S. in Environmental Health. She worked as an Environmental, Health and Safety Coordinator in private industry and with the U.S. Environmental Protection Agency as an Enforcement Officer prior to returning

to school. Currently she is a 2nd year graduate student in the Physical Therapy program at North Georgia College and State University in Dahlonega.

Helen Buckelew is a Family Nurse Practitioner and currently a student in the Master of Public Administration Program at North Georgia College & State University. While researching the relationship between state survey outcomes and the nursing staff shortage in long term care facilities, she organized a day to celebrate the contributions of nursing assistants caring for the aging disabled.

Discussants

Kathryn Fowler is Executive Director of the Athens Community Council on Aging, a private not-for-profit organization serving Northeast Georgia. A graduate of Furman University, Greenville, SC she has completed graduate work at Emory and Georgia State University in psychology and special education. She is past President of the Georgia Gerontology Society, Delegate to the National Council on Aging Institute of Senior Centers, and a trainer and consultant on national Senior Center accreditation. Fowler has worked in the field of mental retardation and is advocate for the needs of elders and women.

Jo George recently completed a Certificate in Gerontology from the University of Georgia. Prior to retiring she was a teacher and world traveler. As a capstone experience for the Gerontology Certificate she established a "Second Wind Dreams" chapter in a Union County, Georgia nursing home.

Melany Sattler holds a graduate degree from The University of Georgia of Social Work. She presently serves as Director of the Adult Day Care Programs with the Athens Community Council on Aging. Sattler has been with the agency since 1997 and coordinates programs for centers in Athens, Winder, Elberton, Greensboro and Covington.

symposium 2

CONTRIBUTORS

University of Georgia

Dr. Mary Ann Johnson is Professor of Foods and Nutrition at the University of Georgia, a faculty member in the Gerontology Department, and an invited member of the UGA Teaching Academy. She received her Ph.D. from the University of Wisconsin and came to UGA in 1983. Johnson's teaching, research and service interests are identification and promotion of nutritional factors that can prevent or delay age-associated disorders.

Jennifer M. K. Cheong completed her undergraduate degree at Ohio State University and is completing a master's thesis and Gerontology Certificate this spring and a dietetic internship this summer. Cheong has a graduate assistantship through a grant from the USDA-Food Stamp Program. She is interested in reducing osteoporosis risk and other age-related health problems through evidence-based intervention programs targeted toward low resource older adults.

M. Allison McCamey received her undergraduate degree from "Ole Miss" and is currently completing a master's thesis and Gerontology Certificate this spring and a dietetic internship this summer at the University of Georgia's Department of Foods and Nutrition. She is completing a graduate assistantship with the Cooperative Extension Food and Nutrition Program. She is interested in evidence-based nutrition, health and wellness programs for low resource older adults.

Discussants

Helen Buckelew's biographical information is included as a contributor to Symposium 1.

Kellie Rogers received a Business Administration bachelors degree with emphasis on Computer Information Systems from Furman University, Greenville, South Carolina. She is completing a graduate Gerontology Certificate at North Georgia College & State University and is employed as a legal assistant by an attorney specializing in elder and family law.

keynote address

Dr. Justin Congdon

Abstract: Life History and Demographic Aspects of Aging in a Long-lived Turtle (*Emydoidea blandingii*).

For 35 of the past 47 years, Blanding's turtles were studied on the University of Michigan's E. S. George Reserve in southeastern Michigan. Blanding's turtle is one of the longest-lived emydid turtles with individuals reaching ages greater than 75 years. We compared body sizes, reproductive traits and survival of young, middle, and oldest age groups of Blanding's turtles to test predictions from two contrasting hypotheses of aging. The relative reproductive rate hypothesis predicts traits that increase the reproductive output or survival rates of older compared to younger individuals, whereas the senescence hypothesis predicts a reduction in reproductive output or survival in older versus younger individuals. Body size did not increase with age among groups; therefore, indeterminate growth was not a mechanism for increased reproductive output of the oldest individuals. Survivorship, reproductive frequency and clutch size were all higher in the oldest age group compared to the middle and young age groups. Nest predation rate was highest in the young age group compared to either group of older turtles. In nests that survived predation, the proportion of nests that failed entirely due to developmental problems was lowest in the young, intermediate in the middle, and highest in the oldest age group. Successful nests produced similar numbers of hatchling and similar sized hatchlings in all three age groups. Traits such as egg and offspring size, and offspring produced per nest did not support either the relative reproductive rate or the senescence hypothesis of aging. Increased embryo mortality in nests of older females compared to younger turtles supports predictions from the senescence hypothesis. Three traits, increased clutch size, reproductive frequency, and survivorship of individuals in the oldest age group compared to younger turtles support the relative reproductive rate hypothesis for evolution of longevity. Because older females have higher reproductive output than younger females, they must have behaviors that enhance their ability to harvest and process resources. We present a hypothesis for more efficient use of temporary wetlands as a method for accumulation of additional resources by older Blanding's turtles.

keynote address

Life History Approach to the Study of Aging of a Long-lived Turtle (*Emydoidea blandingii*).

¹Justin D. Congdon, ²Roy D. Nagle, ³Matthew F. Osentoski, ⁴Owen M. Kinney, and ⁵Richard C. van Loben Sels

Introduction

That the majority of organisms existing today are short-lived, however the broad range of longevities of organisms (Finch 1999) demonstrates that under some circumstances evolution can favor the evolution of extended longevity. More than 40 years ago Williams (1957) asked, “Why is it that after achieving the seemingly miraculous feat of morphogenesis, a complex metazoan is unable to perform the apparently much simpler task of merely maintaining that which is already formed?” Answering that question remains central to understanding the evolution of life histories in general, and aging and longevity specifically. The underlying assumption of the “disposable soma” theory of aging (Kirkwood 1999) is that the expense of maintaining the immortal germ cells is always warranted, whereas investing in maintaining somatic cells depends on their contribution to the welfare of the germ cells. Because death of many individuals results from extrinsic factors (predators, disease, accidents), large investments in maintaining somatic cells are often not warranted. Kirkwood (1999) restated Williams’ (1957) question to ask, “...how long do germ cells need soma to last?” From an evolutionary perspective, the question becomes, under what circumstances will selection favor prolonged investment in maintenance of soma?

To initiate the process of natural selection for longer life span, germ cells have to be housed within individuals that for some reason begin to survive longer, and as a result produce more successful copies of their germ

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cell lines. Because most organisms are killed before they become old, escape from extrinsic sources of mortality may be the most important mechanism initiating selection for traits that extend longevity. Reduction in extrinsic mortality can happen by chance (e.g. invasion of islands without predators) and with little or no additional costs to individuals, or reduction can result from alterations in behavior, body design, or both (e.g., flight, development of poisons or irritants, or armor); mechanisms that are often associated with substantial costs to individuals. Ultimately, benefits to the germ cell line that derived through increased investments in maintenance of soma are all that is important.

In evolutionary terms, death is important only in how it influences births. Once individuals begin to live longer, selection can favor individuals with traits that reduce, prevent, or postpone the expression of senescence traits (Medawar, 1952; Williams, 1957). The relative reproductive rate hypothesis (Williams 1957; Congdon et al. 2001) predicts, particularly in long-lived organisms, that older individuals in a population should exhibit traits that increase the proportion of late to early births directly through: 1) reproductive output (e. g., clutch size, egg size, reproductive frequency, and total lifetime reproductions), 2) reproductive success (nest survivorship, parental investment), or 3) indirectly through increased survivorship of older adults, compared to younger individuals (Congdon et al. 2001).

Among vertebrates, body growth continues through adulthood in some taxa (indeterminate growth of amphibians and reptiles), whereas growth stops in some others (determinate growth of mammals and birds). Indeterminate growth is an obvious mechanism that directly couples age to increased body size of individuals. Among and within populations of reptiles, increased body size is almost always positively correlated with increased reproductive output (Congdon and Gibbons, 1985) and may be associated with increased survival (Fox 1978; Sinervo et al. 1992; Janzen et al. 2000; Congdon et al. 1999; Bodie and Semlitsch. 2000). In contrast, individuals with determinate growth lack the direct mechanism of increasing adult body size that couples age to increased reproductive output. However, increased experience (i.e., learning) associated with age that results in reduced mortality or increased reproductive output in older individuals represents a mechanism for increasing the proportion of late to early births in organisms, regardless of adult growth patterns.

Contrasting views of aging

The most prevalent view of aging (senescence) is based primarily on data from mammals. In general, mammals accumulate physical and physi-

ological traits that reduce performance, survivorship, and reproductive output in older individuals. The senescence hypothesis (Hamilton 1966; Williams 1966; Charlesworth 1995; Rose 1996) predicts that older individuals will have reduced survivorship or reproductive output compared to younger individuals in a population, a view that has by default been assumed to apply to reptiles. Reproductive senescence has been suggested as a cause of reduced reproduction in older female turtles (Cagle, 1944; Gibbons, 1969; Legler, 1960; Moll, 1979). However, a review of reports of reproductive senescence indicated that individuals were categorized as old based on physical appearance and body size rather than on actual ages. In addition, most of the reports of reproductive senescence occurred before it had been documented that females skip reproduction in some years (Congdon and Gibbons, 1990); therefore, females skipping reproduction may have been interpreted as reproductive senescence. A comparison of reproductive traits of young (known age) and old (known minimum ages of over 55 years) Blanding's turtles revealed no evidence for reduced reproductive output of the older females (Congdon and van Loben Sels, 1993).

Age-specific traits related to reproduction and survival form the conceptual and theoretical basis of life history evolution (Cole, 1954; Williams 1966). In general, a life history is a set of co-evolved traits (e.g., age-specific survivorship, reproductive output, and growth rates of juveniles and adults, age and body size at maturity, duration of lifetime reproduction, and overall longevity of adults). Because Gibbons' (1976) observation that the importance of aging in natural populations had not been demonstrated, remains true today, the importance of understanding ecological and intrinsic factors linking age and aging to the evolution of feasible suites of life history traits remains a major focus of life history studies.

To life historians, turtles as a group represent the epitome of long-lived vertebrates (Wilbur and Morin 1988) and paragons of delayed sexual maturity, longevity, and iteroparity (repeated reproduction). Because Blanding's turtle is among the longest-lived and most intensively studied freshwater turtles, it is an excellent model for the study of evolution of life histories in general and for the evolution of longevity specifically. One population on the University of Michigan's E. S. George Reserve (ESGR) has been studied for 37 of the past 50 years [1953 - 1957, (Owen Sexton); 1968 - 1972 (Henry Wilbur), and 1975 - 2001 (present study)].

We examined the published and unpublished information that pertains to age, aging and longevity for the ESGR population of Blanding's turtles, and reviewed the literature on ecological aspects of aging in turtles.

We, 1) examined whether relationships between age and body size support indeterminate growth as a mechanism for the evolution of longev-

ity, 2) reviewed reproductive data and survival of different age groups of female Blanding's turtles in relation to predictions based on the relative reproductive rate and senescence hypotheses, and 3) summarized data from genetic determination of male parentage for evidence of age specific reproductive success of males. That older Blanding's turtle females reproduce more frequently than do younger females (Congdon et al. 2001) requires that older females also harvest more resources, or allocate resources more efficiently than do younger females. Therefore, we examined data from the ESGR study for evidence that learning may contribute to how older Blanding's turtles utilize small wetlands compared to younger individuals. In addition, to explore how fast the traits of older females could increase in the population, we compared life tables based on traits of older turtles to a previously published life table for a stable population (Congdon et al. 1993).

An Overview of the ESGR Turtle Studies

The Study

In addition to the Blanding's turtles (*Emydoidea blandingii*), 6,421 Midland Painted Turtles (*Chrysemys picta marginata*); and 2,508 Common Snapping turtles (*Chelydra serpentina*) have also been marked during the long-term study on the ESGR. Owen Sexton marked 92 Blanding's turtles between 1953-1957 (Sexton 1995) and from 1968 - 1973 Henry Wilbur marked 60 additional Blanding's turtles on the ESGR. During the current study (1975 - 2001), approximately 5,755 recaptures have been made of 1,435 marked Blanding's turtles (350 adults, 200 juveniles, and 885 hatchlings), 817 X-radiographs of gravid females were taken, and 507 nests were observed. An additional 130 Blanding's turtles were marked during periodical searches of wetlands adjacent to the ESGR.

Study Site

The ESGR is administered by the Museum of Zoology and is located in southeastern Michigan about 6 km west of the town of Pinckney, Livingston County (approximately 42° 28'N, 84° 00'W). Access to the ESGR is controlled by a 4-m high chain-link fence and locked gates; security of the 615-ha research area has contributed greatly to the success of the study. Aquatic areas on the ESGR (Figure 1) include a 7.3-ha complex consisting of Southwest Swamp, Fishhook Marsh, and Crane Pond (Southwest Population), and a 5-ha complex consisting of East Marsh and Cattail

Marsh (Southeast Population). Other aquatic areas include George and Burt Ponds (0.6 ha), Hidden Lake (0.4 ha), and Southeast Marsh (0.4 ha), and the Canal, Big Swamp and many small pot-holes, wooded ponds, and temporary wetlands (Figure 1). When combined, these smaller wetlands represent a substantial area of important habitats, but are not considered permanent residences of turtles (Figure 1).

Capture Methods

Turtles were captured in aquatic areas with baited hoop nets, fyke nets, basking traps, and by muddling, dip netting, or seining. They were also captured at terrestrial drift fences and while moving overland between aquatic habitats or nesting sites. Each year from 1975-1986 and from 1991-1994 intensive aquatic trapping was carried out from early May through early-September. Drift fences were usually monitored from April through June and during September and October. In addition, during all nesting seasons (mid-May to the beginning of July) from 1976-2001 four to seven people walked fences and searched nesting areas between 6 a.m. and 11 p.m. each day. For more details on research methods see Congdon et al. 1983, 2000).

All juvenile and adult turtles were individually marked by notching or drilling the margins of the carapace. Prior to 1983, hatchlings were also individually marked, and from 1983 to 1992 all hatchling turtles from each nest were given identical nest cohort marks that were subsequently changed to unique individual marks when an individual was recaptured. The straight-line lengths of both the plastron and carapace were measured at each capture. All turtles were then released at the point of capture or into water nearest their point of capture.

An Overview of Blanding's Turtle

The present range of Blanding's turtle (*Emydoidea blandingii*; family Emydidae) is restricted to south-central and southeastern Canada and north-central and the northeastern United States. Across their range, Blanding's turtles are similar in size with the exception of one large-bodied population in north-central Minnesota (Sajwaj et al. 1998). Adults of both sexes are similar in body size and weight (Graham and Doyle, 1977; Congdon and van Loben Sels, 1991; Rowe, 1992; Germano et al., 2000; Pappas et al. 2000). Female Blanding's turtles do not become sexually mature until they are at least 14 years old (Congdon and van Loben Sels 1993; Pappas et al., 2000), they produce a maximum of one clutch of eggs

per year and some adult females do not reproduce every year (Congdon et al., 1983). Clutch size ranges from 2 to 20 eggs with a mean of approximately 10 eggs (Congdon and van Loben Sels, 1991; Congdon et al. 1983; Depari et al. 1987; Gibbons, 1968, Graham and Doyle, 1979; Pappas et al. 2000), and clutch size increases significantly with female body size (Congdon and van Loben Sels, 1991; MacCulloch and Weller, 1988; Pappas et al. 2000). Over 23 years of study on the ESGR, predation rates of nests was high (0 = 78 %), but variable (minimum = 40 %, maximum = 100 %; Congdon et al. 2000). Among the nests that survived predation, 19.5 % failed entirely, and among the other surviving nests, 45 % had at least one egg fail (Congdon et al. 2000). Adult survivorship is high with some adults reaching ages in excess of 70 years (Brecke and Moriarty 1989; Congdon and van Loben Sels 1991, 1993; Congdon et al. 1983, 2001). The traits of Blanding's turtles on the ESGR are summarized in Table 1. In southeastern Michigan hatchlings emerge from nests about 80 days after egg laying (mid-August - early October). Hatchling emergence occurs in one day for approximately half of the nests and over 2 - 4 days in the other half (Congdon et al. 1983).

Table 1. Traits of Blanding's turtles on the E. S. George Reserve based on data through the 2001 field season.

Traits	Minimum	Maximum	Mean	N
Egg Width (mm)	18.4	25.4	23.3	33
Egg Mass (g)	5.4	14.9	12.0	27
Hatchling CL (mm)	26.0	39.0	35.0	872
Hatchling Mass (g)	5.0	13.0	9.1	846
Female CL (mm)	161	215	186.9	208
Female Body Mass (g)	745	1432	1022.6	169
Age at Maturity (yr)	14	21	17.7	27
Clutch Size (#)	2	19	10.0	759
Reproductive Rate (clutches / yr)	0	1	0.8	
Adult Sex Ratio (M/F)	- - -	- - -	1/3.8	Male
CL (mm)	161	231	192.3	62
Male Body Mass (g)	763	1488	1036.7	48

Aging in Blanding's Turtles

Indeterminate Growth

Adults of some turtle species continue to grow over their entire lifetimes, albeit at reduced rates compared to the growth rates of juveniles. Since reproductive output of adult turtles is almost always correlated with body size of adults (Congdon and Gibbons 1985), indeterminate growth is a relatively direct mechanism that results in increasing reproductive output of older turtles.

In contrast to turtles that exhibit indeterminate growth, adult Blanding's turtles increase in body size only for a few years after reaching sexual maturity (Congdon and van Loben Sels 1991; Pappas et al. 2000) with growth ceasing for both females and males a few years after reaching sexual maturity (Figure 2 a,b). Female Blanding's turtles on the ESGR reach maturity between the ages of 14 - 21 yr (Congdon and van Loben Sels 1993) and have a potential reproductive lifespan of over 55 years (Brecke and Moriarty 1989; Congdon et al. 2001; Pappas et al. 2000). Variation in growth rates among juveniles combined with variation in ages at sexual maturity results in the major source of variation in body sizes among adult females (Congdon and van Loben Sels 1991, 1993). Indeterminate growth, therefore, is not a major mechanism for the evolution of longevity in the ESGR population of Blanding's turtles.

Almost a decade after Congdon and van Loben Sels (1993) examined the ESGR Blanding's turtles for evidence of reproductive senescence, Congdon et al. (2001) tested predictions from the relative reproductive rate and senescence hypotheses by comparing reproductive parameters and adult survivorships of three age groups of female Blanding's turtles. At the end of a 20-year study period, maximum ages of females within the young and middle age groups were 39 and 48 yrs old, respectively. Females in the oldest age group were assigned minimum ages based on their capture as adults between 1953 - 1957; at the end of the study period the turtles were all greater than 66 yrs old.

Traits not Supporting the Senescence or Relative Reproductive Rate Hypotheses (Table 2)

As expected, based on the lack of indeterminate growth in Blanding's adults, body size was not larger in older age groups; and therefore, did not influence differences in reproductive output of the age groups. Size of

Table 2. Traits of Blanding's turtles that support the relative reproductive rate hypothesis, the senescence hypothesis, or neither hypotheses of aging.

Hypotheses	Traits
Relative reproductive rate	clutch size reproductive frequency adult survivorship nest predation rate
Senescence	embryo development nest success
Neither	indeterminate growth body size egg size hatchling size # hatchlings per nest

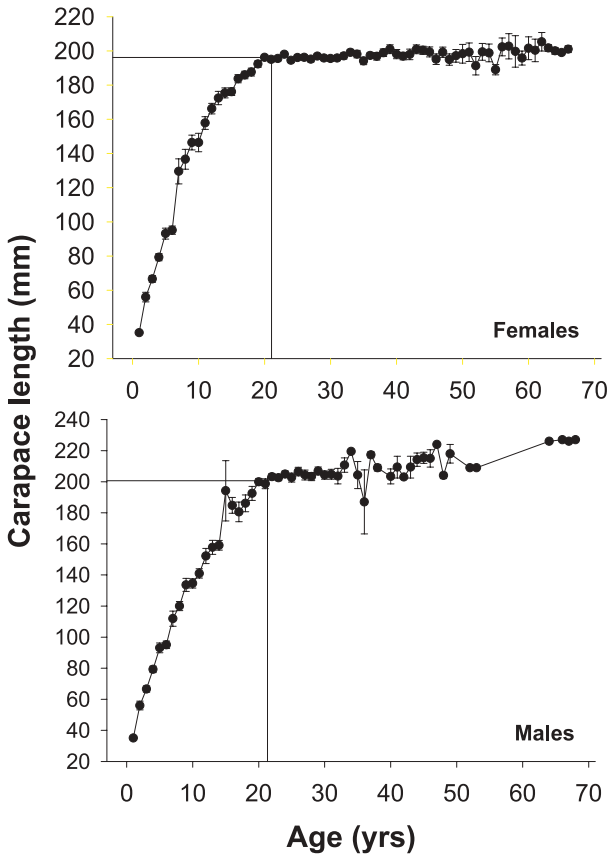
eggs and hatchlings were not different among age groups, indicating that, in the absence of body size effects, parental investment (allocation to individual neonates) is not influenced by age. The number of hatchlings produced per nest was also similar among age groups.

Traits That Supported the Senescence Hypotheses (Table 2)

The proportion of nests that survived predation, but then failed entirely due to developmental problems was lowest in the young age group and increased with age among groups. As a result, nest success was highest in younger turtles.

Traits That Supported the Relative Reproductive Rate Hypotheses (Table 2)

Once the small differences in body size were adjusted among individuals, females in the oldest age group had the largest average clutch size; and the lowest nest predation rates. Whereas recapture frequencies of females were similar for all age groups, reproductive frequency was highest in the oldest age group, and similar between the young and middle age groups. Over the same 20-year period, survivorship of females in the old-

Figure 2. Age specific body sizes of male and female Blanding's turtles.

est age group was significantly higher than that of the middle age group. Survivorship of the youngest turtles were not be compared because not all of them were captured early enough to be present as adults over the entire 20-year period.

Trait Comparisons That may be Sample Biased

Three of the traits (nest predation rates, embryo mortality, and nest success) compared among age groups had the potential to be biased by sampling methods. Because data on nests were collected from many nesting areas over 24 years, among-group differences in the distribution of nests over time and space could have biased some results. Stronger evidence for age-specific differences in nest success due to embryo survival will require common garden experiments where environmental differences are con-

trolled. In addition, since the numbers of hatchlings produced per nest were similar among age groups, support or lack thereof should be viewed with caution.

Conclusions From Tests of Aging Hypotheses

The major cause of variation in body size among adult Blanding's turtles was not indeterminate growth; therefore, changes in reproductive characteristics that are positively associated with body size of female Blanding's turtles are not related to age of adults (Congdon and van Loben Sels 1991; Congdon et al. 2001).

Overall, the comparison of traits among the age groups provides strongest support for the relative reproductive rate hypothesis (Table 2). Increased reproductive output of older Blanding's turtle females results from increases in clutch size, reproductive frequency, and adult survivorship in the oldest age group compared to younger age groups. That traits promoting increases in the proportion of late versus early births remain detectable in the oldest Blanding's turtle females in the population, does not support the assertion that "... senescence always creeps in" (Hamilton 1966).

Male Reproductive Success

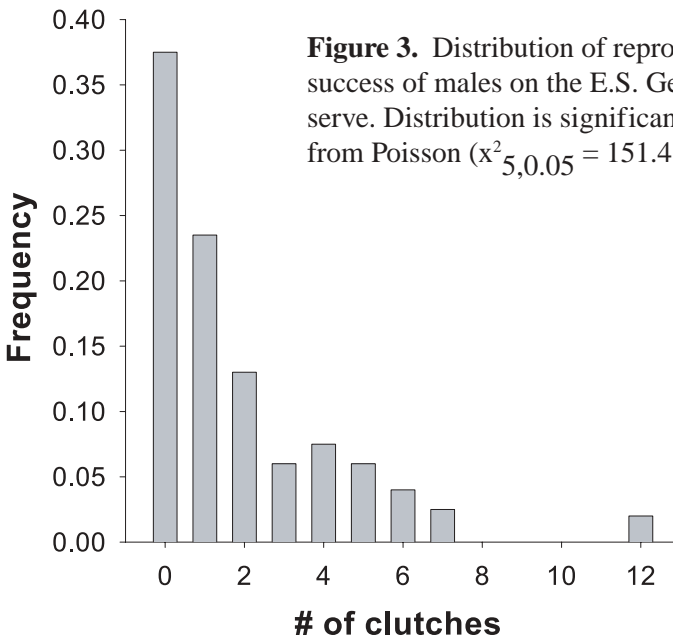


Figure 3. Distribution of reproductive success of males on the E.S. George reserve. Distribution is significantly different from Poisson ($\chi^2_{5,0.05} = 151.4, p < 0.001$)

Table 3. Results of a general linear model using the Poisson family of response distributions with Male reproductive success as the dependent variable. #Only males with known or known minimum ages were included in the analyses.

Independent variable	DF	estimate	Standard error	z- value	p-value
(Intercept)		-2.6438	0.9631	-2.745	0.006
Body Size (all males)	51	0.0191	0.0047	4.047	0.00005
(Intercept)		-2.4338	1.0484	-2.322	0.020
Body Size	39	0.0182	0.0051	3.519	0.0004*
(Intercept)		0.2835	0.2445	1.160	0.246
Age	39	0.0303	0.0074	4.109	0.00003*
(Intercept)		-1.2775	1.1540	-1.107	0.2683
Body Size	39	0.0089	0.0064	1.389	0.1647
Age	39	0.0224	0.0091	2.451	0.0143 *

From 1997-2000, blood samples of all adult males and females captured on the ESGR (and three from immediately adjacent areas) were taken for genetic analyses. In addition, 30 nests (239 hatchlings) with known mothers (observed constructing nests) and 4 nests (27 hatchlings) with unknown mothers were collected on the ESGR and tail tips were also taken for genetic analyses. All adults and hatchlings from the population were genotyped at 10 microsatellite loci (for methodology see Osentoski 2001) and fathers were assigned to hatchlings using the likelihood approach (Marshall et al. 1998). Male reproductive success was defined as the number of hatchlings assigned to a given male over the 4-year period. The percentage of males genotyped was estimated at 95% of the total population (51 males) over the 20 years of study (Congdon and Gibbons 1996).

Of the 266 hatchlings genotyped, 103 (38.7%) were assigned to males from the ESGR. Examination of capture histories suggested the percentage of unassigned hatchlings was related to females nesting on the ESGR that had mated with unmarked males that did not reside on the ESGR (Osentoski 2001). Analyses of all ESGR males sampled indicated that reproductive success was non-randomly distributed among individuals (Figure 3). Male reproductive success differed significantly from a Poisson distribution ($\chi^2_{5, 0.05} = 151.4, p < 0.001$) with more males than expected

siring greater than 4 offspring and more males than expected siring zero offspring (21 males, 39%). When examined separately, both male age and body size contributed significantly to explaining the variance in male reproductive success; however, when examined simultaneously only age explained a significant portion of the variance (Table 3). Aggressive male-male interaction (Kinney 1999, Rowe and Moll 1977) could explain some of the success of larger male Blanding's turtles, but as noted for females, indeterminate growth of adults contributes little to variation in adult body size.

Use of Small Wetlands by Blanding's Turtles

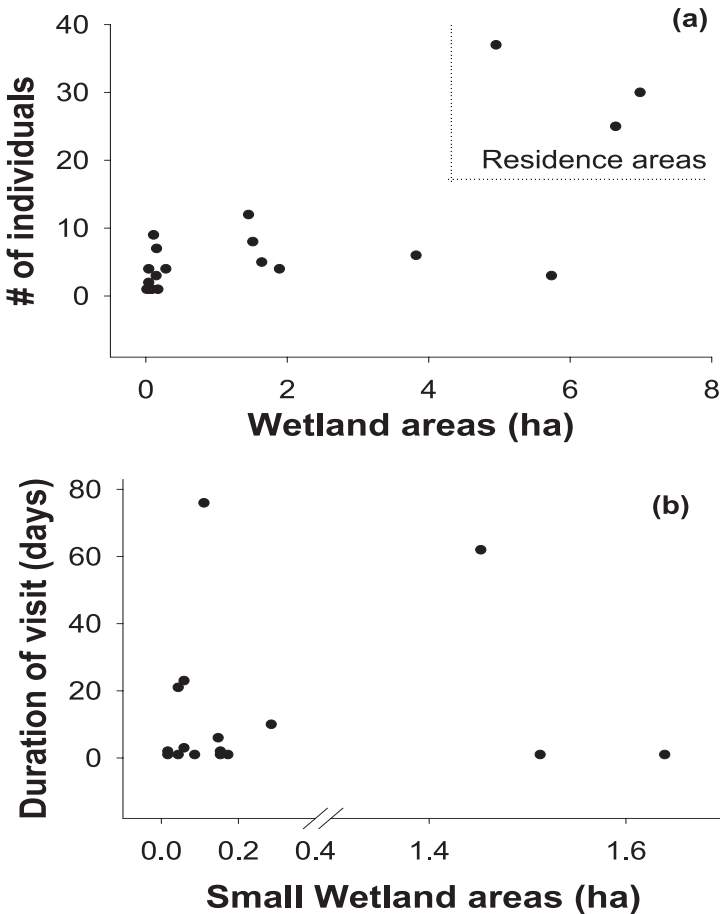
Although large, permanent marshes and swamps are typically resident wetlands of Blanding's turtles (Figure 4a), data from several sources indicate that small (< 4.0 ha) wetlands are important to adults as sources of ephemeral, but concentrated food sources (e.g. amphibian and insect larvae), for mating, and refugia during nesting migrations by females and during hatchling dispersal from nests (Pappas et al. 2000; Piepgras and Lang, 2000; Kinney 1999; Ross and Anderson; Butler and Graham, 1995; this study Figure 4 a,b). Small wetlands used by Blanding's turtles on the ESGR include many types ranging from clear, permanent spring-fed wooded pools to shallow, ephemeral, duckweed-covered swamps. Individual turtles may visit small wetlands more than 1-km from their resident marsh, and at least some individuals appear to make similar movements among wetlands over a number of years.

Movements of adult turtles among wetlands in early spring, combined with observations of courtship in March and April suggests that spring is a peak mating period (Graham and Doyle 1979; Baker and Gillingham 1983; Herman et al. 1995; Sajwaj et al. 1998; Joyal et al. 2000 Pappas et al. 2000; Piepgras and Lang 2000; ESGR studies). However, Blanding's turtles have been observed mating in all months of their activity season, and a second peak in breeding activity may also occur in fall (Graham and Doyle 1977, Kinney 1999, Pappas et al. 2000; Piepgras and Lang 2000). Movements among wetlands by males may increase the probability of males mating with more females (Morreale et al. 1984). Females visit small wetlands located near nesting areas, to rehydrate (Kiviat 1997; Kinney et al. 1998; Congdon et al., 2000) before and after strenuous activities such as nesting migrations, nest construction, egg-laying, and covering the nest. Newly emerged hatchlings in the fall also use small wetlands near nesting areas for temporary refugia (Butler and Graham 1995) and probably also to hydrate. The ability of hatchlings to find and utilize small wetlands may

substantially contribute to their survival during what is presumed to be a particularly vulnerable period (Ehrenfeld 1979).

Blanding's turtle is primarily carnivorous (Cahn, 1937; Lagler 1943; Penn 1950; Graham and Doyle 1977; Kofron and Schreiber 1985; Ross 1987) and feeds on seasonally abundant tadpoles and larval salamanders. Small isolated wetlands are apparently utilized by both sexes as sites for harvesting ephemeral resources (e.g. amphibian and insect larvae). Radio-telemetry studies combined with mark recapture data on the ESGR indicate that during mid-summer, both male and female turtles sometimes re-

Figure 4. Relationship between wetland area and (a) number of individuals captured, and (b) duration of visits during the 1997 and 1998 field seasons.



main in small wetlands for periods exceeding 60 days (Figure 4b). Three such small wetlands (Spring Pools, Stone Ring Pool, Badlands Pool) are relatively permanent spring-fed shrub swamps that contain high densities of larval amphibians (e.g., *Rana sylvatica* and *Ambystoma* spp.). However, since courtship and mating has been observed in small wetlands (Kinney 1999; Pappas et al. 2000), males may benefit from increased resources and mating opportunities. If the experience of older individuals of both sexes results in improved abilities in using ephemeral wetlands (e.g., initially finding them, reduced effort to return to them, and knowing when to visit them), they should have increased benefits, and reduced costs and risks associated with their use of them. In addition, enhanced use of small wetlands by older adults of both sexes may also result in a higher probability of matings between old individuals.

General conclusions

Our review of the life history and aging of Blanding's turtles summarizes what is known about the population on the University of Michigan's E. S. George Reserve in general, and compares younger females to a group of females marked as adults between 1953 - 1957 (Sexton 1995). The oldest group of females had higher survivorships, reproduced more frequently, and had larger clutch sizes than did younger females. In addition, a preliminary genetic analysis indicated that older males had higher reproductive success than did younger males. We developed an age-based scenario of differential use of temporary wetlands as a mechanism supporting the larger allocation to reproduction by old females. The scenario would also place old males in proximity of old females during periods of high resources and intense breeding activity.

Using life table analyses, we compared cohorts of the oldest Blanding's turtles (with traits of increased fecundity and survivorship) to a cohort of females with traits that result in a stable population (Congdon et al. 1993) to explore how fast cohorts of old females could double in numbers compared to the general population. Increasing annual fecundity by 0.5 and 1.0 eggs for old females resulted in population doubling times of 793 and 444 years, respectively, whereas increasing adult survivorship by 0.02 resulted in population doubling time of 226 years, or half the time to double the population that occurred by increasing fecundity by one egg. Increasing both fecundity by 1.0 egg and survivorship by 0.02 [representing the reproductive output and survivorship of the oldest age group in the ESGR population (Congdon et al. 2001)] reduced the doubling time 148 years.

Assuming that there is a genetic component to attainment of old age by Blanding's turtles, then selection for longevity (represented by the doubling times resulting from the above cohort comparisons) could be driven to some extent by increased ability to find and more efficiently use temporary wetlands. Efficient use of wetlands by older individuals (compared to younger individuals) could support the increased production of offspring by older females, and the increased probability of matings between old males and females (i.e., resulting offspring would have two sets of "old genes").

The distinctive suite of life history characteristics coupled with their protective shell appears to promote overall and reproductive longevity of turtles. Intensive long-term studies of turtles (Stickel 1950; Legler 1960, Galbraith et al. 1989; Gibbons 1990; Congdon and Gibbons 1996; Iverson 1993; van Loben Sels et al. 1997; Pappas et al. 2000) have focused primarily on the difficult task of describing the ecology and life histories of species' populations. Long-term observations of individuals have provided information on longevity that goes well beyond the survivorship of captive or exceptional individuals. Rather, the observations have provided age structures and probabilities of survivorship for individuals of different ages. Growing appreciation of current issues related to the biology of aging can further focus long-term studies on obtaining data on the oldest-aged individuals in the population; such focus can provide new and contrasting views of aging (Congdon et al 2001).

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symposium 1

University-Community Collaboration in Gerontological Education

Georgia State University Faculty Presentation

Dr. Frank J. Whittington, Carole Hollingsworth, Mary MacKinnon.

Abstract: Creating dividends by investing in community partnerships.

This symposium describes how community partnerships advance the research, instruction, service, and development mission of the Gerontology program at Georgia State University. Further, it illustrates how the university, its students, community organizations, and alumni reap benefits from collaboration. The faculty paper describes the center's history of collaboration with various state and local agencies, how they helped shape much of the research agenda, how service providers in the field of aging have informed our projects, and how the Gerontology Center reciprocates. We explore the use of community organizations as laboratories for students to practice what they have learned in the classroom. The development of a strong alumni base is one of our most valuable assets, but reaching beyond traditional partnerships to enhance our financial position has become an added dimension of our portfolio. The student paper explores the positive, though different, internship experiences of two students, one an undergraduate and the other a graduate student. Both participated in the Division of Aging Services Elder Abuse Project. The students describe their individual perspectives and personal experiences working with a professional team who helped shape their career paths. They also were able to network with other agencies involved in the program. They tell how this internship experience helped shape educational and career paths and conclude that internships are a win-win partnership for students, the university, and the community agency.

Happy Trails: The Gerontology Center and its Community Partners

Introduction

As Director of the Georgia State University Gerontology Center, I would like to be able to tell you that we have a wonderful program of instruction, research, and community service in gerontology and that we do it all ourselves. Alas, I must confess that only the first of those statements is true. We do have a great center, but we have help. Let me explain by describing some of our partnerships and, as Roy Rogers might have said, the “happy trails” we travel together. Our center is based on a simple model: everything we try to do is, in some sense, a collaboration. I don’t mean just a collaboration of faculty, or of faculty and students, but a collaboration between the gerontology folks at Georgia State and others—gerontologists and non-gerontologists—in the community. In fact, our center operates on a partnership model that, we feel, extends our reach and makes us more powerful and successful than we could ever hope to be operating alone.

It works like this. We have set for ourselves four goals: 1) to educate students—both undergraduates and graduates—in gerontology; 2) to contribute to the store of new knowledge about aging and old age through research; 3) to share our knowledge with practitioners and policy-makers in the field of aging; and 4) to gather the resources necessary to achieve the first three goals. In briefer terms, we are engaged in instruction, research, in-service training, and fund raising. Our definition of success in each of these areas requires partnerships in the community, and each is overlapping with, and reinforcing of, the others. I will give some brief examples, and then my colleagues, Carole Hollingsworth and Mary MacKinnon, will elaborate.

Instruction cannot be done exclusively in the classroom, and all knowledge is not found in textbooks. We insist that our students seek additional knowledge in the community. Visits to agencies and organizations and guest lectures by practitioners are a normal part of almost every course we teach. Students are not only required to serve an internship with a community organization, but they are expected to join and become active with professional associations. In all these ways we add to students’ knowledge of the network in which they will work and increase their chance for employment after graduation.

Research, as we conceive it, and as we do it, is essentially a collaborative process. Not only do we believe that gerontology is an interdisciplinary field, we practice that in nearly every project. Team meetings are both

challenging and fun, as each of us learns more about the perspectives and knowledge of the others' fields. We never begin a research project without involving representatives from the practitioner, and even consumer, communities in our planning. Normally, as we begin writing a proposal, we form an advisory group of key experts in the area of interest to give us direction and critique our ideas. This group also advises us about gaining access to sites or subjects, and, often, some of these partners even volunteer their own organizations as participants. In any case, funding agencies look very unfavorably on proposals that do not show that access is already assured but are impressed with the practicality of research plans developed in this collaborative way.

We seek also to involve students as research assistants on all our projects. One of our students, Molly Perkins, who co-edited the student convention monograph four years ago, has worked in progressively more responsible positions on five different Gerontology Center projects, culminating with her current job as a full-time project manager on an NIA-funded project, where she supervised the work of a 12-person team, including 9 other graduate students. As a result of these five experiences, Molly has collaborated with faculty and other research staff on 30 papers presented at meetings, two of which have been published and several others are nearly ready for submission. She will be a co-author of a book, based on one of these projects, that is currently in preparation. We consider all our students as partners in both the educational and research endeavors.

At the end of the research project, the advisory group forms a natural audience for our findings and always are on the dissemination list for our final report. And they are actually enthusiastic about attending our training conferences and recommending them to their employees and colleagues. Increasingly, we find that funding agencies expect a more ambitious plan for disseminating the results of the research project than the traditional "publication in refereed scientific journals." We feel the formation of community research partnerships is the most effective way to do applied and intervention research.

The final piece of our collaboration puzzle, and perhaps the hardest to achieve, is what is often called "development" or "advancement." We can call it simply "fund raising." This is the effort, often overlooked by academic units, to secure additional funding for its efforts. We all have some basic university support, and we work hard to secure external funding for our research, but basic fund-raising must go beyond those sources. We need money for graduate research assistantships, scholarships, student travel, awards, and food—items not adequately funded or not funded at all by the university or grants.

You can see how our development partnerships benefit our educational programs, but they also support our research by helping us recruit better students and give us more connections to our alumni as well as to other professionals in the field, many of whom are the very practitioners and policy-makers we seek to reach and influence with the findings of our research. Our efforts to “make friends for gerontology,” which is an integral part of fund-raising, work also to disseminate knowledge about aging and the needs of older people to the broader community. Now, Carole and Mary will give more detail about how our collaborative efforts in each of these areas helps us achieve our goals.

Creating Dividends by Investing in Community Partnerships

Community Partners in Research Programs

Seven years ago, the Gerontology Center at Georgia State University was moved to the Provost’s Office and charged by the Provost to add a research mission to its traditional instructional objective. A common strategy in the corporate world would be to write a “business plan” mapping out the probability of success through defining the goals and outlining the methods for achieving them. How often do we do this in the business of gerontology? We must have done something right. Over the last 5 years, the research arm of the Center has received and collaborated on research grants and contracts totaling \$718,621. Our research strategy focuses on individual adaptation to chronic health problems and improving quality of life in long-term care facilities, with a special emphasis on minority elders.

How did we get there? We asked the question, “What is our business and who are our customers?” Georgia State is an urban university in one of the largest governmental complexes in the Southeast with a unique opportunity to affect the lives of elders in our state. We invested wisely in partnerships with community leaders who share our core values, who are strategically located near our campus, and who pay “dividends” that keep us in business. We also knew this was a two-way street—we are *their* community partner, from whom they receive benefits. How did we make this work for us, and, maybe more importantly, how do we support our partners?

Much of our research has been shaped by a major partner—the State Long-Term Care Ombudsman Program (LTCO). The research director of the Gerontology Center, Dr. Mary Ball, who previously worked for the Ombudsman Program, drew upon her knowledge of state-wide needs, and used her contacts to our advantage. In our very first research project, sev-

eral key people supplied us with needed statistical information about long-term care in Georgia and helped us gain access to assisted living facilities (ALFs) in the metropolitan Atlanta area. Our most recent NIA grant proposal grew out of conversations with LTCO about the critical need to maximize satisfaction and retention of direct-care staff in the assisted living environment. They help plan research agendas and help us carry them out. In return, we share our research findings at their state conferences and training seminars, which informs their program and provides valuable input in their daily jobs. This, in turn, fulfills a major goal of the Center—to disseminate research information to those who can use it best.

The Office of Regulatory Services (ORS) is another good research partner and a valuable asset. They supply us with needed information about regulations that directly affect the quality of life of both providers and residents in assisted living facilities. We often need the most current statistics for research proposals and conference preparation that would not be available except through our contacts at ORS. They attend and critique our day-long conferences, and provide feedback to ALF providers and other professionals in the field of long-term care.

What do we do for them? We donate our time to conduct training seminars for those groups they regulate, provide ORS with information about residents, staff, and care in the facilities they regulate, and share our findings and recommendations about regulation burdens in both large and small ALFs. We also have provided free planning assistance and meeting space in our facilities for their mandatory state-wide training events and conferences.

Through our community involvement and research projects, we have developed a core of advisors who are some of our most valuable partners. These include the administrators and staff of assisted living facilities who let us spend weekly research time in their homes. Others who serve as advisors are the Director of the Division of Aging Services, representatives from Assisted Living Federation of America, Assisted Living Association of Georgia, CoAge, and other aging services. Because one foci of our Center is minority aging, we also have formed an advisory team of African American scholars to consult with Center staff on issues of research with African American elders. They meet with our staff to help develop research strategies and provide an interdisciplinary, interracial perspective that influences our data collection methods, as well as analysis of those data.

What do we do for our advisors in return? We have “freely” given back to the assisted living community in several ways: 1) staff training seminars and day-long conferences that provide required CE credits; 2) public forums that bring legislators, community leaders, regulators, LTCO,

and professionals together to the common table of debate, and finally, 3) the Gerontology Center provides our research scholars, Dr. Margaret Counts-Spriggs of Clark-Atlanta, and Makungu Akinyela in the Department of African American Studies at GSU, with opportunities for collaboration and publication in interdisciplinary research projects.

Our first community partnership developed through an alumnus connection. One of our certificate graduates, Ray Avant, was a specialist in prevention of mental health and substance abuse problems with the Gwinnett, Rockdale, Newton County Regional Board for Mental Health, Mental Retardation, and Substance Abuse. Through his interest and influence, we contracted with the GRN Board for a small pilot project, which led to a two-year, multidisciplinary intervention to prevent mental health and medication problems in 4 study homes in the GRN counties. This research project brought together a physical therapist, nutritionist, social worker, community psychologist, geriatric pharmacist and 4 sociologists.

One of our newest collaborative partnerships brings together the Gerontology Center, the Department of Communication at GSU, and 1000 older adults (GrandPanthers) in metro Atlanta. This program will benefit both faculty and student researchers in aging by creating a ready pool of subjects who agree to participate in studies, experiments, clinical trials, and evaluations of social and health care interventions. The GrandPanthers will gain educational and community involvement, opportunities for new relationships, and the opportunity to serve and advise the Center and participate in its activities.

There are many other stories of partnerships with assisted living professional groups, civic organizations, and religious groups, but the goals and benefits are the same. We are building credibility with policy-makers at state governmental agencies, who need to be aware of the impact of research in Gerontology on social and economic issues in Georgia, and with the business community, which is looking for research partners to gather and analyze data, monitor program performance, and help with need assessments. Long-term care professionals also need to know about our research, and it is important to make sure the results of our efforts are known within our own university and extend to all alumni who have benefited from their education in gerontology.

Academic gerontology not only undergirds the research program by supplying students who help to carry out our research, but is a valuable link to many of our partner organizations in the community and in state government who need qualified researchers for their projects. As we work with the organizations and individuals who are developing policy and programs that affect elders, our capacity to carry out meaningful research is enhanced.

Dividends for Educational Program

Partnerships with organizations in local communities as well as at the area and state level can enhance and enrich our educational programs in a variety of ways. They provide internship opportunities and research sites for students, professionals who can share their expertise and experience both in the field and in the classroom, and the potential for financial support through project grants and scholarship funding.

To establish community partnerships that benefit student education, gerontology programs need to seek opportunities to work with organizations in ways that are mutually beneficial. Gerontology faculty and staff can serve on project advisory boards and review panels, on conference planning committees, and as consultants offering technical assistance. As discussed earlier, increasingly there are opportunities for gerontology programs and community organizations to collaborate on funded research projects. Organizations and projects selected for collaboration need to fit the gerontology program's goals and interests and its faculty's expertise. It is important to establish guidelines for partnership development through careful program planning.

Community Partners in Education

In gerontological education there has been a long-standing tradition of using community organizations in the field of aging as laboratories for students to practice what they have learned in the classroom. But, how often have we viewed these organizations as full-fledged partners in the educational process and sought to nurture the relationships? At GSU we find that the most successful internships occur within organizations with which the center has an established working relationship. Through prior partnership endeavors these organizations have gained an understanding of our educational programs, and we have learned about their interests and capabilities. We can, therefore, structure internship experiences that provide desired educational outcomes for students. As discussed earlier in this paper, the partnerships established through our research projects offer students research opportunities that foster teamwork and link research to policy and practice.

In addition to providing access to internship and research opportunities, our partnerships with community organizations link our program to practitioners who participate in classroom instruction or serve as consultants for research projects. For example, in the aging policy and services classes, it is particularly helpful for students to hear from professionals

involved in the development of aging policy in the state or from those who administer and provide direct services. Students in the health and aging class begin to understand the intricacies of the waived Medicaid programs and their impact on the community from practitioners involved in their daily management. Graduate research assistants gain different perspectives from researchers working in community organizations. These connections bring an added dimension of vitality and relevance to our academic programs. Also, they link students to professionals working in the field providing valuable networking opportunities. Often academic gerontology programs recognize the important role of professionals from the community in student education by formally appointing these individuals as adjunct faculty.

Alumni as a Link to the Community

One of the most effective strategies we have used to link to the community has been to develop a strong base of alumni support. Our alumni work in many diverse types of organizations in the metropolitan area as well as across the state and nation, and they provide connections to potential partnership opportunities. We make a concerted effort to stay in touch with alumni, and currently we have contact information for 85% of our graduates. We keep alumni informed of center activities and invite them to events during the year. The Gerontology Alumni Club, established in 1987 as an affiliate club of the GSU Alumni Association, encourages support of the center and, in effect, serves as a community partner.

The alumni club has become a valuable partner in the development endeavors of the center. Currently, in partnership with our alumni club (which includes many of the 410 alumni of our center) we are engaged in efforts to raise money to add to our scholarship fund. Over the last three years we have raised over \$40,000 in endowment funds for scholarships, which this year will yield three \$500 scholarships for entering graduate students. These will be supplemented by two scholarships (in the amount of \$2,250 each) provided to us by another of our community partners, the Fulton County Residential Care Facilities for the Elderly Authority, which has decided to collaborate with our center in the support of future professionals in the field of aging. Our goal is to provide every entering student with financial aid in the form of an assistantship and a scholarship. The club is continuing to seek development opportunities for the center's programs. Rebecca Stahr, a recent graduate who is an interior designer, serves as the club's vice president for development and spearheads the scholarship fund raising campaign. Because of her connections to the building and construction indus-

try as well as the creativity and ingenuity she brings to the development efforts, we are pursuing community partnerships in new and different areas. This is only one example of the invaluable role alumni play in our collaborative endeavors.

Reaching Beyond Traditional Partnerships

During the alumni scholarship campaign, we quickly learned that fund raising encompasses far more than seeking financial contributions. The campaign provided opportunities to make connections with organizations other than those we traditionally think about in the aging network. Several organizations we contacted were interested in supporting the scholarship campaign, but beyond that, they expressed interest in learning more about our center and exploring ways to collaborate. Some examples: a hospital contributing to the fund was eager to use GSU facilities to host health fairs for seniors; a non-profit organization providing home modification and rehabilitation for seniors and the center continues to explore ways to forge a volunteer program with our Gerontology Center; and a private consultant has agreed to work with the center to increase its visibility and market its programs. In the future we hope to reach further into the community seeking broader learning opportunities and financial support for our students.

Conclusion

Each of the major tasks of the Gerontology Center—carrying out research, disseminating the findings, educating students, and raising funds to support it all—is done most effectively through community partnerships. Our partnerships with community leaders supply us with practitioners who consult on research projects, participate in classroom instruction, provide internship opportunities, and secure financial contributions that make the overall goals of the center possible. The GSU Gerontology Center also serves as a valuable community resource for our partner organizations, which insures that “happy trails” extend in both directions.

symposium 1

University-Community Collaboration in Gerontological Education

**Georgia State University Student Presentation
Kelly Fitzgerald, Patrice Lomax**

Abstract: Investing in our Future. Internships pay off.

Internships are an integral part of a student's educational experience. Students do not always envision all of the benefits they can receive from internships. Many times, the internship experience is viewed as working for an organization, making copies, and becoming the summer "gofer." Many times this is the type of internship experience organizations provide. One way to avoid a nonproductive internship is to find an internship program that works closely in collaboration with the academic program. A good internship program coordinator understands the importance of making the experience educational and knows if they want to continue to be recommended by the school for internship opportunities, they have to work hard at making the internship a worthwhile experience. Readers of this paper will see that an internship can be exciting and there are ways to make an internship a positive, educational experience.

Introduction

A very successful internship stems from a good partnership between the school and the organization in which the intern works. This collaborative partnership offers many benefits to all of the parties involved: 1) the student gains working experience; 2) the organization gains theoretical knowledge and inexpensive labor; and, 3) the school gains credibility in the community. The first purpose of this paper is to explain why collaboration between the school, the organization, and the student is extremely important and how all parties can benefit from the dividends that result.

This paper is written from the perspective of two students. The first student, Kelly Fitzgerald, is a graduate student who has already received her master's degree in public administration and is pursuing a graduate certificate in gerontology. The second student, Patrice Lomax, is an undergraduate student in psychology and working toward a minor in criminal

justice and an undergraduate certificate in gerontology. Both students have extremely different backgrounds and career goals but are, currently, both interns at the Georgia Division of Aging Services (DAS), working with the same team of professionals who are responsible for developing a state elder abuse program. The two different perspectives will lend insight to other students on ways to find internships, what might be expected during an internship, and the possible outcomes of participating in an internship. Therefore, the second purpose of this paper is to give the reader an opportunity to see how internships vary among students and to give the future intern an idea of some of the dividends the school, the organization and the student may receive from the internship.

A Graduate Student's Experience

As a graduate student, I searched for internships differently than Patrice, as you will see later in the paper. I took it upon myself to find all of my internship programs instead of using a school internship counselor. Sometimes searching on my own for the perfect experience was the only way to find an internship, especially when I was in a program that did not have internship opportunities already lined up for the students. The positive side to this approach was that I did not always have competition when applying for internships. Companies appreciated my self-initiative and saw that I was not afraid to go after what I wanted. Therefore, I was usually able to land the job and sometimes even be paid.

I would like to call myself an internship “junkie.” With every academic program I have completed, I have felt it necessary to participate in an internship. Each internship experience complimented my education and directed me even closer to the type of job I was seeking. My internships have ranged from working for a private Atlanta construction company, to living in Belgium for a summer while working for the Georgia Department of Industry, Trade and Tourism, to working for the General Accounting Office, and later on for the Democratic Party of Georgia. I found this to be an exciting way to sample a job; therefore, helping me decide on the type of employment that would best suit my career goals after graduation. Internships are only short-term, so if things were not going very well, I knew I would be moving on to other things very soon. On the other hand, if I was in an organization I liked, I had the opportunity to build my relationship with them and increase my chances for future employment.

After completing two different degree programs, I found myself highly educated and still unemployed (in the perfect job). I found it very difficult to gain access to the field for which I had spent so many hours and dollars

studying and preparing. I had just received my master's in public administration and knew I wanted to work within a government agency, but I was not sure as to which sector. A few months later, I discovered the gerontology program at Georgia State University (GSU) via an informational email and decided that aging programs and policy was the sector of the government in which I wanted to work. I quickly applied and began my academic career in gerontology.

When I entered the gerontology certificate program, I decided to prepare for my future career in the field of aging in a different way. After my first semester, I decided to look for an internship. Normally the program requires more course work before participating in an internship, but I felt, in my situation, an internship early in my studies would be more beneficial to my educational experience. I knew I needed to make contacts in the field early in my studies and begin to prove my abilities to potential employers so that I could possibly begin to work full time in an agency before I graduated from the certificate program. I began to ask everybody I met in the field of aging if they needed someone on a part-time basis. I found that it is sometimes easier to convince an employer to hire you part-time if they are tight on funds or short on staff, conditions I am learning, that are not uncommon in the field of aging. In the end, the organization and I would both benefit in many ways from the short-term collaboration. I would begin to learn about the field of aging and the organization would have an inexpensive, yet educated employee. They also would begin to see that I could contribute new information to them and how I might be valuable to them in the future.

Before I began the graduate certificate program in gerontology, I contacted Georgia State's Gerontology Center for names of people in the field. I felt this was a good beginning point to start a networking relationship within the professional world of aging. This was especially true since all of the names I was given were graduates of the program. They knew that the program in which I was enrolled was important to the field and were, therefore, very receptive to me. Most of them offered internship opportunities to me before I even started the academic program. After speaking to them and deciding which internship would be the best for me, I accepted an internship position with the Georgia Division of Aging Services (DAS) and began working my second semester of the certificate program. Luckily, the timing was right for both of us—I wanted to complete my internship early in my education and DAS was starting a new program in which they needed some part-time (unpaid) help.

From the beginning of my internship at DAS, I quickly felt like I was an important part of the team, unlike some of my past internship experi-

ences. The group I was assigned to was just beginning to develop a new program for older, abused adults. Only a few months before the project and my internship started, DAS had been awarded a \$60,000 grant that would last for one year. Within that period, they were required to set up and implement the program so that the program could gain funding the following year. DAS knew that they did not have very much time to spend training someone to develop an information and referral database, a client information database, and assist in other related projects. Therefore, they needed someone who had some experience and was able to work with little supervision.

Before I started my internship at DAS, I was fully aware of the importance of the elder abuse project, the rigid time line required to implement the project, exactly what my role would be, and the significance of my position as part of the project's development team. I was given specific assignments that were vital to the program, which included creation of the databases that were previously mentioned. During our team meetings, I was encouraged to voice my opinion and offer suggestions for development of the program. I was praised for my skills and ability to fit in with the team and was asked to participate in other task force meetings related to the project. This is not always the case for internships. As an intern during my undergraduate program in environmental development, I was placed in a customer service position at an Atlanta construction company where I was responsible for data entry. Although this was a necessary task for the company, it did not build my skills the way I had hoped. I was not included in management meetings, nor did I get the opportunity to express my views on company-related issues. Two skills I learned were patience and typing. Overall, I found that even though the job may not be exactly what you want, you are still gaining knowledge.

Components of a successful internship include working with professional teams, participating in networking opportunities within the community, and working closely with faculty and other interns. Each of my three internships provided increased levels of responsibility and expanded my personal network among people in government and 'aging' organizations, all of which paralleled my growing education. I found the closer the school worked with the organization, the more I learned and felt the experience was an asset to my education. I was able to experience all of these important components while working at DAS, mainly because GSU and DAS have collaborated for several years building the internship program. I have made extremely important contacts in the field of aging while having the opportunity to prove my skills and abilities to those with whom I worked. Unfortunately, students may not always have the chance to incorporate these

essential components in their internship. One way to ensure that these components are implemented in an internship is by setting goals. For example, if a student is going to work within an organization for eight weeks, a realistic goal is to make at least one contact each week with someone new, either within the organization or with a related group. By the end of the eight weeks, the student will have met at least eight people who may be more enthusiastic to hire them in the future. Overall, most of the jobs I have been offered in the past were the direct result of having an initial contact person within the organization. Therefore, I have found that networking is an essential part of a successful jobsearch.

In theory, internships are an extension of educational training. Students capture what they learn in the classroom and apply it to real projects that will potentially affect an organization. This is not always the case. In a few of my internship experiences, I found myself performing the dreaded “grunt” work. The internship would begin with assignments that seemed to be important jobs, only to be overrun with daily tasks that full-time employees felt they could give to the intern. Another problem I faced was the politics of business. For example, if a manager was trying to prove a point to upper management, I was used as a pawn in their game. They were well aware of the fact that I would not be there for a long time and that I would not speak up in fear of receiving a bad grade. I found that the closer the school worked with the organization, the less political was my experience. Since most organizations know they need the internship program to provide them with educated and inexpensive laborers, they try to make the internship experience pleasant and educational. Also, employees or managers sometimes feel responsible and want to help educate those who may eventually fill their position in the organization. So, sometimes, the collaboration between schools and organizations benefits the student indirectly in ways an intern may not suspect. This, in the end, is another lesson I have learned from all of my internships.

With each of my internships, I feel I have positively enhanced my education. When I graduated from high school, I did not have an academic or a career path arranged for me. I found that each internship experience complimented my academic career and helped me to define exactly what I wanted to do once I began working full-time. It was not until my internship at DAS did I decide that I wanted to pursue a Ph.D. in gerontology and further explore the field of aging. Before the internship at DAS, I knew I wanted to work within a government agency, possibly in program development. Once I began the internship, I decided I wanted to take a step back in the process of program development and work in research determining what agencies, such as DAS, needed to know in order to develop adequate pro-

grams that would support the aging population. Therefore, I have found through careful planning and taking chances on experiencing different things I have been able to finally decide the career path that is best for me.

An Undergraduate Student's Experience

My name is Patrice M. Lomax and I am a senior at Georgia State University. My major is psychology with a minor in criminal justice and upon graduation, I will receive an undergraduate certificate in gerontology. With my varied interests, I was thrilled with the prospect of interning with the Georgia Division of Aging Services (DAS) on their grant-funded Elder Abuse Project. I was afraid that I would end up with an internship that would not be beneficial to my future career goals. However, because of working so closely with Mary MacKinnon, my internship coordinator at GSU, I was able to obtain an internship experience that gave me valuable work experience to further my career and enhance my resume.

A benefit of interning with my agency has been the opportunity to network and collaborate with professionals in various disciplines. This aspect of the internship was vital for the project I worked on because of their need for varied professional knowledge regarding elder abuse crimes. These opportunities would not have been easy to obtain without the assistance of DAS. With just a telephone call from my project supervisors, I was able to set up interviews with Paul B. Freeman, Fulton County District Attorney, and Don Henderson, Special Assistant, DeKalb Solicitor General. Both of these individuals were eager to share information with me that would benefit DAS. I also have been able to communicate, via email, with professionals located outside of the State of Georgia asking for assistance with the elder abuse project. Moreover, interning with DAS allowed me to meet professionals who might be potential employers. For my interview with the DeKalb Solicitor General, I was introduced to Chanda Sukhanath, a special investigator with the DeKalb Solicitor General's Office. After briefly discussing my internship at DAS with Ms. Sukhanath, I was invited to go out in the field with her and learn about investigating elder abuse crimes and interviewing victims and perpetrators. I was quite surprised by Ms. Sukhanath's willingness to give me the opportunity to obtain this valuable experience, which she mentioned might help me when applying for employment in the criminal justice and / or gerontology field.

The training aspect of my internship was very unexpected. I knew from my initial meeting with DAS that I would be interning with a great agency, and I knew DAS would provide training and experience to help me

in my career. I could not have imagined, however, the extent to which DAS has helped me grow, not only professionally and academically but personally as well. There were so many issues I was unaware of in the elder community and that I could never have learned through classroom lectures alone. The insight and opinion of professionals employed by DAS and other government agencies, who have been a part of their various disciplines for 20 and 30 years, was amazing.

When I interview individuals, I truly feel as though I am representing DAS, and the professionals I interviewed treated me as though I was as important as anyone who worked for DAS or any state agency. They showed me the utmost respect and many complimented me on providing new ideas and insights on elder abuse criminals and victims.

With my classroom work and review of recent theoretical perspectives in gerontology, psychology, and criminal justice, I have been able to contribute to DAS important information, new ideas, and helpful insight on future projects at DAS. One of my ideas was to find out if there were elder abuse perpetrator registries similar to those for perpetrators of child molestation. I was not able to find registries for elders so I made my supervisor aware of a possible new service. Not only did this internship make me aware of issues like this, it enabled me to meet individuals with whom I could share my observations and ideas.

Conclusion

Although Kelly and I worked on the same project, we had different internship experiences. Kelly has had the opportunity to intern with various organizations throughout her academic career. With each internship experience, she was able to define the next step in her education path and work closer towards her career goals. Conversely, my only internship experience was working at DAS. I did not know what to expect and therefore, I entered into the experience with an open mind and without any bias or past disappointments.

Moreover, Kelly and I followed very different paths for actually finding our internships. Kelly felt she needed to find the internship that suited her best without assistance from GSU. However, I knew I needed the assistance of the GSU Gerontology Center because I knew it would be very difficult to find an internship that would allow me to blend psychology, gerontology, and criminal justice into one internship. As an undergraduate, I was pleased to receive an internship with a state agency like DAS. With the persistence of the center I was able to find the perfect internship and it has been wonderful. Kelly was also successful in finding a great fit for her

internship experience. Finally, with Kelly having her Master's in Public Administration and I will soon receive my first Bachelors degree, the significance of the internship is a little different. This internship helped me build my collaborative skills and gerontological knowledge and, hopefully, will provide a path to employment in the field while I decide whether to pursue graduate education. On the other hand, Kelly has already decided to further her education and has interned and worked for different organizations.

While everyone does not intern for the same reasons or take the same experiences from their internship experience, the most valuable part of the experience was working together with a professional team. We would encourage all students to seek opportunities to collaborate with potential employers and find an internship that meets your specific needs. Initially, you may not find the perfect internship. However, if you keep searching and working with your college or university's gerontology internship coordinator, chances are you will find that perfect internship. Always remember that everyone wins with collaboration. We, as students, represent our university and provide agencies with hard work and new insights. Agencies, in turn, provide research sites opportunities for students to practice what they learned in the classroom. Internships are a win-win situation for all involved—the university, the student, and the agency.

symposium 1

University-Community Collaboration in Gerontological Education

North Georgia College & State University

Dr. Jill Hayes

Introduction

According to the Sherman (1993), “the aging of our nation is no secret”. The number of adults in the United States over the age of 65 years has increased 24% since 1970, and is projected to increase another 44% by the year 2040. There has also been a significant growth in the “oldest old” population, adults over 85 years of age, and often members of this cohort are more vulnerable to ill health and encountered in long term care residential settings.

Concomitant with this significant population shift, is a need to shift the education of providers from the acute care centers to residential communities and agencies providing home-based care (Sherman, 1993). Students entering the health care field will spend 75% of their work hours caring for older adults. There is thus a significant need for well educated providers of care for this population. There is also a need for students from other disciplines to have experience and/or expertise in issues critical to older adults with which this population is confronted on a daily basis. Residents of nursing homes have unique needs and this population is projected to increase by 50% over the next three decades. Within this population health care needs differ as do financial, lifestyle, and educational/recreational needs and students must be afforded opportunities to respond to these needs through experiential learning activities. An excellent way to provide such activities is through a partnership between the academic institution and the residential institution.

Nursing homes have traditionally been at the “bottom of the food chain” when it comes to resource allocation in health care and education. Societal biases, and limited resources in the academic and health care environments have consistently placed constraints on the resources made available for nursing home staff development, student learning experiences, and faculty practice. A viable partnership between academe and a community long term care facility is a natural collaboration to strengthen student learning experiences and relationships in the community, as well

as to implement what is often the university's mission relative to student learning and community accountability. In addition, through this relationship, faculty develop a better understanding of the role of staff in this setting, begin to place a higher value on their role, and facilitate students to develop similar perspectives (Anderson & Cobe, 1993). Students and faculty alike also see residents in a different light, recognizing and acknowledging the value of older adults and the inherent rights to quality of life that they possess.

Significance

With the limited resources available in the nursing home environment and the vast and diverse resources accessible in the academic environment, a partnership between the two is of obvious benefit to both, resulting in a “win-win” collaborative effort. University communities possess a variety of faculty resources such as unique talents and interests, educational expertise, and career trajectories related to their role. In addition, the students at the university possess unique talents, interests, career goals, and educational backgrounds/expertise. To facilitate the university community to fulfill the requirement to demonstrate community involvement and to encourage community awareness and involvement in the student population, partnerships between academe and community agencies are essential. The commitment of North Georgia College & State University (NGCSU) to the community of Lumpkin County and Dahlonega is evident in the university's mission statement, and in the many activities of students, student organizations, and the faculty. The establishment of the partnership with Nursing Home was just an addition to the already numerous activities the various disciplines on campus have been, and continue to be, involved in to the benefit of students, faculty, and the community.

The goals of this partnership were numerous. From the perspective of the university, there were faculty resources which could be brought to the nursing home staff and residents to meet needs for continuing education, staff development, and resident activities. Student organizations on university campuses often have a service mission and constantly strive to identify worthwhile projects in the community in which to involve their membership. Most universities, especially liberal arts universities such as NGCSU, offer a diversity of multidisciplinary programs of study which have much value to bring to a nursing environment. Finally, university students are often mandated to participate in off campus activities such as internships, service learning projects, and practica, to fulfill degree

requirements and faculty must frequently help them to identify appropriate settings.

From the perspective of the nursing home, resources for staff development are limited and the university is well prepared to augment what resources do exist. The diversity of staff educational and/or employment levels, staff talents and interests, and staff needs, fits well within the capability of the university community's diversity. The many needs of the resident community in the nursing home also affords a diversity of experiences which has the potential to encourage participation from all disciplines available in the university community. The close proximity of the nursing home to the university makes it easy to enact the partnership and also makes it clearly appropriate and essential for the university to be involved. Finally, the role of the nursing home in the community mandates that the nursing home support/maintain/enhance the work role expertise of its staff and the university has the capacity to assist them in that effort.

The Process

The initiation of the partnership arose from the desire of the nursing department administrator to extend assistance to the nursing home to provide quality care for its elderly residents, career development for its staff, and to enhance the education of students at all program levels (undergraduate and graduate), in all disciplines, in the field of gerontology. Initially the hope was that students from Business, Fine Arts, Education, Physical Therapy, Psychology, and Nursing would be involved in the partnership. At the request of the nurse administrator, the university higher administration consented to the partnership and the partnership was formalized in a meeting between the Nursing Department Head (chair of the committee), the nurse educator of the nursing home corporate office, and members of the disciplines on campus who expressed an interest. At the first meeting, Physical Therapy, Nursing, Psychology, and Fine Arts departments were represented, along with the committee chair and the nurse educator from the corporate owner of the nursing home. Ideas for student activities were explored and the decision was made that each department would determine the level and type of student involvement, with no constraints placed on creativity. Each faculty member present was encouraged to identify ways for their students to become involved, include the educational/experiential opportunity on their syllabi, and to offer academic course credit to students willing to participate. In addition, faculty were asked to have their students contact the committee chair to complete a questionnaire entitled, "Changing student perceptions of aging through

intergenerational activities,” both prior to their activity and following their participation. This was to fulfill the grant proposal for research on this topic, which as funded mandated the collection of data for future presentation, and provided resources to support the student and faculty participants.

The Benefits

A review of the project which included anecdotal data from faculty and students who participated, and the data collected from the questionnaire mentioned above, demonstrated a clear benefit to both the academic environment and the nursing home community.

The partnership afforded students a diversity of experiences to fulfill service learning projects, course required internships, practicum experiences, and off campus activities to enhance their educational program of study. Students in the Master’s in Public Administration and the Physical Therapy program report that the experience enhanced their knowledge of the role of nursing homes, the challenges experienced by nursing home staff, and the “lived experiences” of nursing home residents and staff. Students also reported the richness of the experience and how beneficial the experience was in augmenting their program of study. The addition of opportunities for meaningful educational experiences was appreciated by faculty who are constantly searching for such opportunities for their students. Faculty also enjoyed having increased opportunities to assist them in meeting their role requirements for community service.

The nursing staff had opportunities for continuing education specific to their needs. The physical therapy students spent time each week interacting with residents but also were available to assist the staff with difficult residents and/or residents with needs for increased mobility. They also provided staff with some “tips” for proper body mechanics when lifting residents. The MPA student provided staff and the nursing home administration assistance with the regulatory processes confronted by nursing home staff, and also provided the staff with opportunities for involvement with their professional organization.

The residents also benefited from this partnership. Since students were encouraged to be creative in their involvement, a variety of activities were initiated. The student Habitat for Humanity chapter volunteered to paint the corridors of the nursing home to brighten the environment. Other students organized parties for the holidays, painted finger nails, and scheduled craft activities for the residents. The physical therapy students interacted with many of the residents one-on-one, becoming acquainted

with them, their issues and needs, and then worked to meet those needs through the staff and their planned activities. Many of the student participants also took part in the Second Wind Dreams celebration, where they saw the benefits of community involvement in the nursing home first hand.

Challenges

Although the benefits of the partnership were numerous and meaningful, there were also significant challenges. Prevalent in society today is ageism – a reluctance on the part of many to acknowledge the inevitability of aging, and therefore an equal reluctance to participate in anything related to aging and aging adults. In addition, nursing home environments are often depicted in the media as less than positive and, in actuality, places to avoid! Nursing home residents are presented as difficult, frail, and not worthy of active participation in society.

To make this partnership a success required an ongoing concerted effort to combat these images on the part of faculty, the staff and administrators of the nursing home, and the chair of the committee. Some success was achieved but the participation of all disciplines initially invited to be a part of the partnership did not occur – only nursing and physical therapy students and faculty participated, along with students from an introductory psychology course, in the first year. The other departments invited to participate were unable to identify opportunities for student participation that would “fit” within their program of study. It was evident to this author that challenges specific to the university were often related to time constraints of faculty and students, attributable in many cases to biases against aging and nursing homes in general. Although the committee chair met personally with the department heads of all disciplines identified earlier, their instructional priorities clearly did not include aging issues and the enhancement of their students’ knowledge of aging and the needs and value of older adults.

Surprisingly enough, challenges were also presented by the staff of the nursing home. The facility administrator did not actively participate in the project and his lack of support and recognition of the benefits of the project conveyed the message to the staff that the project was of little significance. In addition, the staff appeared to be conditioned to have low expectations of any project, either initiated from the administration of the nursing home, or from outside agencies. As a result, they were reluctant to participate and did not recognize the potential availed them for staff development, continuing education, and professional involvement. The

residents of the nursing home are also an extremely frail population and therefore represent a challenge to students of diverse backgrounds attempting to identify and meet their needs. Finally, this particular nursing home environment presented challenges such as distasteful odors and a “dilapidated” physical appearance which made it difficult for students, and also served to perpetuate the less than positive image of nursing homes in general.

Collaborative Activities

Although we were not able to involve all disciplines initially identified, the health related disciplines which did participate fulfilled many needs of staff and residents. As stated earlier, staff were assisted with regulatory processes, and how to be involved and rewarded through professional organizational activities. Staff also received recognition and assistance in their difficult role as caregivers of a frail population of residents. Residents were afforded opportunities for a variety of stimulating activities and one-on-one interactions with students genuinely interested in them as persons of value.

The Second Wind Dreams program was integrated into the project the first year and was a huge success. Through this program, students saw firsthand the benefits of community involvement in the nursing home for staff and residents. This program is ongoing in the nursing home in Dahlonga, and opportunities for student involvement continue to exist.

Future plans include an ongoing effort to involve more disciplines in the project and to provide more structure to students and/or faculty in need of such guidelines. Additional grant proposals will also be developed to provide funding support for this project.

Program Evaluation

The intent is for this partnership to continue and grow with the involvement of students from the many diverse disciplines on campus. The use of the questionnaire “Changing student perceptions of aging through intergenerational activities” will be used as a measure of one impact of the project. Additional questionnaires are being explored for use in the measurement of the benefits of the project to staff and residents. These instruments include “The staff burnout” instrument and “The geriatric depression scale” for residents. An intense effort is currently underway to initiate collaboration with the originally identified disciplines on campus within the existing partnership. These departments will be contacted and

encouraged to include opportunities through this partnership in their syllabi for the academic year 2002-2003. A meeting will be scheduled in August, at the start of the fall semester, to help participants identify specific activities for students and faculty to engage in within the context of the partnership for the benefit of the residents, staff, and themselves.

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University-Community Collaboration in Gerontological Education

**North Georgia College & State University
Graduate Program in Physical Therapy Presentation
Dr. Carol A. Miller, Chayla A. Harris and Leia D. Richardson**

Abstract: Older Adults. Do I Have Time?

The “Partnership” program between North Georgia College & State University (NGCSU) and Gold City Community Living Center was designed to provide educational programs that would enhance the quality of life for residents of this facility and their families. The program also provided the opportunity for students to learn about the elderly who are residing in a nursing home setting.

Eleven students participated as volunteers in the “Partnership” program during the Spring Semester of 2001. Students devoted each Friday morning for several weeks at the nursing home assisting staff members with various tasks such as, bed making, cleaning the living areas, and re-filling water and juice pitchers. The students also designed and implemented other activities that facilitated personal interaction between the students and the residents.

Immediately following the experience and again ten months later, the students participated in informal discussion groups to share their perceptions of working with the elderly residents and the nursing home setting. Five leading themes were identified: perceptions of who we are, perceptions of the elderly, perceptions of the nursing home setting, perceptions of the staff and their roles, and perceptions of volunteering.

The students shared positive and negative feelings about the experience. They recognized the physical inability of the residents, yet some students were surprised by their cognitive abilities. It was also evident to the students that the workload of the staff seemed overbearing. Although the hardships in the nursing home setting were at times discouraging, the students expressed a sense of satisfaction through their participation in the program.

Physical Therapy Student Perceptions about Participation in a Community Service Project in Northern Rural Georgia

Introduction

The “Partnership” program between North Georgia College & State University (NGCSU) and Gold City Community Living Center was primarily designed to provide educational programs that would enhance the quality of life for residents of this facility and their families. Additionally, the program was designed to provide the opportunity for students to learn about the elderly who are residing in a nursing home setting. The goals of “Partnership” were quite complimentary to the Mission of the Graduate Program in Physical Therapy, which states:

[our mission] is to educate physical therapy students as novice clinical scholars who will be prepared to function in a variety of treatment environments ranging from rural, less populated, to metropolitan areas. Students are expected to be able to respond to the health care needs of diverse populations of the world at large, our country and state, and especially, rural Georgia. Although this mission is based in the teaching role of the department, it relies importantly upon required student participation in faculty scholarship, professional and community service activities that collectively yield valuable experience in the application of physical therapy practice; experiences not ordinarily encountered in formal didactic and clinical education courses (NGCSU, PT Program, 2002).

Therefore, with these goals in mind, the faculty and students in the graduate PT program were excited to collaborate in the Partnership Program.

The purpose of this presentation is to share our perspective and experience at Gold City Nursing Home. As future physical therapists, we feel that it is important to determine if attitudes can be positively influenced through experiential learning in a nursing home setting, especially in this rural region of Georgia. Understanding issues that may be related to perceptions about the elderly is especially important because it is well recognized that there is difficulty in recruitment of physical therapists working with the elderly in nursing homes and in rural health care settings (Cheh & Philips, 1993; Hageman & Meyer, 1998; Gordon & Denton, 1992). Although numerous sources reflect that a student’s desire to work with the

elderly is enhanced by their experiences with elders (Anderson-Hanley, 1999; Hageman & Meyer, 1998; Ragen & Bowen, 2001), much less is understood about the student's perceptions of working with elderly in nursing homes in rural communities (Hageman & Fuchs, 1993).

Physical Therapy Student Participation in the Partnership Program

Eleven students in the first year of their physical therapy program at NGCSU participated in the Partnership Program every Friday morning during the Spring Semester of 2001. One faculty member from the PT department was also present at the nursing home (NH) to guide and supervise all of the student activities. The student volunteers were not involved in physical therapy tasks, as they are given ample opportunity throughout the curriculum to participate in direct patient care during clinical affiliations. For the purpose of this project, the students were asked to participate in doing tasks such as making beds, cleaning the resident's living areas, serving juice/filling water pitchers, and visiting with residents. They also independently decided to design and implement many other activities for the residents during this experience, such as making posters for resident's birthdays, painting the resident's fingernails, reading to residents, decorating resident's rooms for the holidays, and assisting in an Easter Egg Hunt. Finally, students were also able to 'actively learn' about the elderly and the nursing home environment through on-going discussion with the physical therapy instructor and through observation of the certified nursing assistants, nurses, physical and occupational therapists during their interaction with residents.

Exploring the Meaning of the Partnership 'Educational Experience

First Group Discussion Session

Immediately following completion of the project, student volunteers were asked if they were willing to participate in a discussion group with the PT faculty member. The meeting was not formally structured and questions were asked in an open-ended fashion to allow exploration of the meaning of this experience. The students were not required to participate in this exploratory session; all 11 volunteers were willing to share their perspective. The facilitator asked two guiding questions for discussion: (1) "Tell me about your experience at Gold City – how you felt, what you observed, including any positive and negative aspects of volunteering there"; (2) "How

have your perceptions changed about this project, about the residents or anything else you want to share, since you began volunteering?" Notes from this 30-minute session were recorded and summarized by the PT faculty member.

The following comments reflect the student's perceptions about this experience. The comments, which were simply categorized into positive and negative experiences and responses, are summarized below:

Positive Experiences and Responses:

"It seems that the residents are happy we're there... they seem to enjoy seeing us there"... "it's great to have direct contact with the older people living there..."

"The employees are VERY appreciative" / "it seems to be a major relief for staff"

"I really thought that people in nursing homes would not be very cognitively aware... now that I've been talking to folks, I can see they have lots of memory... they can talk about their family and their jobs and where they've been..."

"Even though some of them tell the same story, it seems to help them, too.... I guess they need to just talk about their life..."

"I have a whole new outlook on aging...." "...it is very difficult to see how sick some people are... I take so many things for granted...."

Negative Experiences and Responses:

"I get concerned that the residents are 'left' too long when they need something. The worst part is I can't really help them to go to the bathroom and they have to wait a really long time for the nurse.... that makes me feel really bad..."

"Sometimes I hear the staff responds negatively, like, 'I can't do that now'..." "it's pretty clear that the nurses just don't have the time..."

"My grandmother is in a nursing home – it's the White House compared to this one... it's kind of sad, but it makes

you realize that there is a lack of financial support here...”
“There also seems to be a lot of residents who don’t have family either...”

Second Group Discussion Session

The second group discussion with the physical therapy students was held approximately 10 months after the project was completed. The purpose of the second ‘group forum’ was to explore the long-term impact of the student’s participation in the project and any potential changes in student perceptions about this experience. The students who had participated in the project had also recently completed their first two physical therapy clinical experiences.

The physical therapy instructor and the nursing director of the Partnership program facilitated this discussion. The session was audio-taped and later transcribed for further exploration of themes, omitting any identifying information. The process was explained, prior to the beginning of the session, and the students were then given the opportunity to leave if they preferred not to participate. All 11 students were willing to participate. Ten students were able to participate during the designated meeting session; one student responded to the same guiding questions the following day.

The group session, which lasted approximately two hours, addressed similar questions to that of the first session: (1) “Describe your experience at the nursing home - how you felt, what you observed, including any positive and negative aspects of volunteering there”; (2) “Now that you have completed a clinical experience, was it beneficial or not that you participated in the Partnership experience as volunteers (non-PT role), did this experience influence you as a future physical therapy clinician?”; (3) “In hindsight, how and why did you find time to do this project?”

Following the group session, the physical therapy faculty member and two physical therapy students who had participated in the program reviewed the transcribed data. A number of leading themes were identified by the readers, which appeared to summarize the ‘essence’ of this experience for the students as a whole. The student responses were generally related to perceptions about the elderly; perceptions of ‘who we are;’ perceptions about the nursing home setting; perceptions about the staff/role of the workers; and perceptions about volunteering following this experience. The frequency and expression of positive and negative responses were similar to those found in the first session, however, there appeared to be fewer negative comments made in the second session than the first.

Perceptions about the Elders/Residents

The majority of the student's responses during our group discussion were related to their encounters with the residents in the nursing care facility. Many of the comments reflected the student's apprehension and fears about meeting the older residents, while other responses clearly expressed how this experience changed their previous thoughts about elders. Because the students had now completed their first and second clinical experiences, they were also able to share how the Partnership program changed their approach to elders during their clinical experience. The responses below generally reflected the student's perceptions about elders.

"When I was in the 4th and 8th grade we went to NH and I always wondered what am I going to say to these people... well over the past few years, 3 out of 4 of my grandparents have died – two went to nursing homes first. Going now to this NH – I see these people as my grandparents, and I just don't think I can go in and remind myself every day of how I would want to treat my family... it's very heartbreaking to me – cause I see my own family."

"When I sat in with the PT who worked with the patients there, it was really frustrating and discouraging to see what you did and didn't get out of those individuals. Some of them because they didn't want to, and some of them because that wasn't important to them right then at that time in their life, but others because they just couldn't..."

"I had this one experience with a resident. There are no words to express how I felt that day. I actually got to see a patient who was terminally ill and I knew it at the time, but it didn't really hit me until a couple of days later when I heard he had 'passed'... But, just to see him struggling to do things that I do every day - open my eyes, drink, walk, and just do for myself. But to be totally dependent upon somebody to 'stir-up' a drink so he could drink and get nutrients... That's something I take for granted every-day, that was so touching - that was reality; that was someone who was going to meet their maker, moving through

that whole transition of their final stages of life.... I learned so much by being in that room – the instructor guided me. I was so nervous, what if I gave him the wrong drink, what if I did something to him. I get chills, even now, thinking about it. I remember thinking, I’m a first year student and we haven’t gone to clinic yet. I went in there thinking this is going to be good. I’ll get a chance to interact with older people, because we’re around healthy people all day long.... And so you say o.k., this is my test.”

“[story of patient with advanced dementia]. “She held my hand... She was in her own world, maybe it was her meds and other stuff... She was someone everyone needed to meet, because it’s so different from what you think. You walk in thinking she’ll be an older calm sophisticated woman – it’s different. I’m glad she opened up to me. She did get very agitated, but she would choose who she would talk to or wouldn’t; when she would talk or wouldn’t. So, I was very surprised that day when she did. It was a good experience and it makes you feel good that you’re connecting with a person, whatever level, cognitive-wise or not. At least, there was human interaction there. With her touching and interacting with me and not being so pulled back and away from another individual...”

“I’ve been around elderly people my whole life and spending time with my grandmother and in our church or on home visits. Even though I did that, I did it out of obligation, not knowing whether I would like geriatrics – cause I thought I really like other stuff better... And I think it gave me a new focus because when I went to clinic in acute and sub-acute, I saw a lot of older patients. Maybe being in the NH not in a PT role helped me foster being more patient with the elderly. It helped me have a little better understanding that even though they’re not the people they were 30 years ago, or even 30 minutes ago, there’s still a piece of them that is still young and it’s still the person they used to be. So many people push the elderly under the rug; they can’t understand them; they think that they don’t hear them or don’t know they’re being talked about. They Do!!”

“I was in a transitional care unit and saw lots of elderly patients, too. And I would catch myself wanting to stay in the room to chit-chat and talk cause I realized that old people are funny... they really are... I guess I don't know when you develop a sense of humor – but now I notice that even my parents are funnier. Still, I would catch myself wanting to listen to their stories...”

“A lot of younger people have misconceptions about the elderly – that they all should be treated like children and that their minds are gone. Especially as a young health professional we need to have these experiences to know that this is not the case. Sure some people were in a different mental status, but in the NH there was a good variety of people... it gave me the opportunity to learn when to modify and when not to. Not all elderly are the same...even if you work in outpatient and talk to somebody like they were 5 just because they were 87 years old – and they have a clear mental status, well they're gonna think your crazy!”

Perceptions of what elders felt about “who we are”

Although this was not a major theme expressed by the students, a few of the comments reflected the student's desire to feel ‘special’ to the residents. These particular students shared their disappointment when they thought elders saw them in a negative way, but felt very proud when the elders acknowledged them in a positive light.

“I felt needed, I guess, because I was there. Trying to help out – even if it was a small difference in their day, it felt good to feel needed.”

“It was good for our image, too, because a lot of days, older people kind of – I don't want to say look down on the younger population... but, sometimes they think that, well, they are not like how I used to be at their age and that young people have just changed so much. I think that it was good for us to go in there and show that – yes, we are young, but we still appreciate older people and the wisdom they can give us. I thought it was important for us and our image...”

“I think we reminded them a lot of their children and grandchildren and their family, too. Although there’s a lot of people with dementia in there, if they can talk to me and feel like they’re talking to their daughter or granddaughter, that brings back good memories for them – and that’s important! And even though I’m not that person, if I can be that person to help them for a while that’s a duty or a role I’m willing to fulfill.”

Perceptions about the Nursing Home Setting

Another significant theme discovered in the group sessions were the student’s feelings about the nursing home setting, which were often more negative in nature. The students expressed their concerns about the overall environment in the nursing home, and were disheartened to see the daily struggles that the workers experienced in this setting.

“I think that one of the hardest things that I had to deal with, as far as going to the NH -it’s really not a negative aspect, but a hard thing we had to deal with – was leaving...and seeing their faces when we had to leave...and then they would ask me “You’re coming back next week, aren’t you?”...and you had to honestly say you weren’t and you wanted to come back. I wanted to, but there just isn’t always the time; that was the hardest thing.”

“Personally, I have never been in the NH before. I always had a negative outlook on nursing homes. Typically, I know I am speaking on behalf of my cultural/family background --black people—we don’t send our elders to nursing homes. I don’t know if growing-up I always was taught that it was a negative thing – to throw someone in a NH... but when I went to see it myself and see the things that could take place, it was like my eyes opened to see another perspective...”

“I found it difficult imagining the future, because I remember one of the residents one day said to me “You’re gonna be in my shoes someday.” It was a real reality awakening, because you think I am gonna be in their shoes one day. Right now I’m young working with elderly people, but one day this may be me in the NH – without friends or

family like some of the residents there... and my heart goes out to them cause what if that's me... how would I want other people to treat me?"

"It was seeing the same person, sitting in the same chair, in the same place in the hallway every Friday that I went – it seemed depressing in a lot of ways. But I was doing something, so the way I felt far outweighed the bad stuff..."

"I was just scared I guess. I remember this one patient who was very irate and the instructor said she liked to be rolled up and down the hallway in her wheelchair. So, I said I'll give it a try. Well, half way down the hallway, she started s-c-r-e-a-m-i-n-g and everybody was looking at me and I was saying 'I promise I'm not hurting her.' I guess I was nervous, but then it got so much easier. "

"One thing I noticed was that people in the NH wanted to tell you what they wanted or what hurt, or to tell you something – to be able to express whatever they had on their mind. And the nurses, staff, are on such a busy schedule – so it's not necessarily their fault – they don't have time to listen..."

"To be completely honest, I didn't want to go at first. I was scared cause the only other experiences I had weren't good. But, my [classmates] came back and had good comments. So, then I thought I ought to try it so I convinced myself to go. Then when I went it wasn't that bad – so I started going back and I actually started to like it."

"I don't know how to really say this, but, NO this NH really wasn't the nicest or the most posh place. And I know there were areas of need and neglect and overworked people. But, I thought that even though this wasn't a place I would hope I would ever have to go – I felt like I was giving something to make this situation just a tiny bit better. Their kids have put them in the NH and expect that they're taken care of...however, they don't realize that their parents miss them and this place isn't perfect..."

Perceptions about the Staff/Role of the Health Care Workers

The students commented about the staff and role of the employees at the NH in the initial discussion, however, now that they had completed their first clinical experiences, it seemed that the students more readily noted the dynamic relationships of working in the NH. The responses shown below reflect their shift in perspective over the ten month period.

“It gives you a greater appreciation for what the certified nursing assistants (CNA) have to go through every day, and the nursing staff, and the rest of the support staff. Because I know one day when I’m a PT, if I’m in a skilled nursing facility, I know I’m going to be making substantially more money than those CNA’s are. And their jobs and the nursing staff’s jobs are just taxing. We tried to pick up some slack for four hours every Friday morning, but I kept thinking about all of the days we weren’t there...”

“And even an appreciation for the PT, because I don’t know if I could do PT in a NH setting full-time. You’re exposed to a whole different level of stuff, like their [resident’s] dependence...”

“Even with the stuff we did, as simple as changing bed-sheets or getting water for people, and doing the other services we wouldn’t do as a PT – that was hard. It was my role, beforehand, before PT school. When my role was to visit – that was fun; the socialization part was wonderful. But, I see my role now as different, it’s hard to imagine working in that situation.”

“At first, I didn’t think about this, but now that I look back on it... although there’s a really fine line – you’re just not a clinician; you’re a friend also to the patient, especially in the NH. You feel like lots of time people get neglected because people are just there to do their job. I know there’s a fine line to draw, but you have to be a friend if you want a person to open up to you.”

Perceptions about Volunteering in the Partnership Program

The final theme evolved from the student responses to the question: “In hindsight, was this program beneficial and would you recommend it to other students?” Although a few students generally expressed feeling disheartened by some of their experiences, the majority of them believed that future physical therapy students should participate in programs similar to this.

“Looking back, a year hindsight, it was a very good learning experience for myself, as well as, for the residents cause it had that interaction that binds people. You get to uplift them and make a difference in somebody’s life – it’s a rewarding experience in and of itself... so it was a benefit.”

“I never really had the chance to work with the elderly population... it was an eye opening experience. I enjoyed it! When I went to the clinic – I think it was easier to talk to older people because of my previous experience at the NH... it was amazing how they wanted to talk to you... sometimes it seemed as if they were just lonely...”

“I think my communication skills improved because of the NH experience. Because before going there, I really didn’t have a lot of experience with the elderly – I had more with younger kids and peers. I really thought it was important to ‘lean in’ and make sure that they understood you because we know with the physiological changes of aging. So, I thought, when I got to clinic, to be mindful of communication. Cause... a lot of times elderly people are so polite and they won’t ask you to repeat something – they’ll just go on and do it like they thought they heard you say. So, you have to be patient and not be scared to repeat something so they understood.”

“For me, it was a release, it was almost centering to be there. It was reality, it was what we’re gonna be doing, it was being there with the kind of people we’re going to be treating, the kind of people we’re gonna be with...”

“ I’ve been around the elderly for as long as I can remember. My mom was real good about doing NH visitation – so this project to me was wonderful. I have always enjoyed going in and sitting down to share and socialize with the older adult. It was something I wanted to do – so you just adjust your schedule and you just make time. I felt I benefited from it and it was fulfilling; it was a release from school. I would definitely recommend it – whether it is positive or negative – it was the actual exposure...”

“I think giving to others is what keeps you alive and everybody got something out of this. Not only did we get something out of it by going but the excitement for us was also doubled when someone would be excited to see us coming. So, when you give, you always get more back than you ever thought you would. Just seeing how the workers and the residents were so appreciative – how enjoyable it was and decorating the place to brighten it up – was a ‘spark’ in the week. I’d definitely recommend it!”

Discussion

The informal ‘group forum’ discussions, conducted initially following participation in the Partnership program and then 10 months later, provided an opportunity for the physical therapy students to simply share their feelings about volunteering. The general themes discovered during our group discussions particularly revealed that the physical therapy students had both positive and negative perceptions about the elderly and nursing homes that were consistent with the findings in other studies (Anderson-Hanley, 1999; Ragan & Bowen, 2001; French & Mosher-Ashley, 2000; Mosher-Ashley & Ball, 1999).

In regard to their perceptions of elderly, the physical therapy students openly shared both positive and negative feelings about the residents’ physical ability and inability. Although the student’s were acutely aware that the residents in the NH facility needed a great amount of physical care, they were equally surprised at the cognitive capability of many of the residents. Yet, some of them also expressed their concern that the residents seemed lonely or appeared depressed. The literature notes that many individuals in society often hold misconceptions about the ability levels of elderly, especially those who reside in nursing homes. In fact, Cowgill (1986) especially believes that because independence, physical, and cognitive ability is

so profoundly emphasized in America, elders in need of increasing levels of health care are often perceived negatively.

During the second group discussion, a few of the students compared their past experiences with grandparents and elders in their community to the residents in the NH. One student had negative experiences with her grandparents in a NH, and expressed greater difficulty in participating in this project; however, this experience also fostered a more positive perspective of residents in a NH for others. Mount (1990) suggests that health care professionals will often draw upon past positive experiences with older family members and friends when forming perceptions about elderly. Perhaps, for some, the student's shift in perspective following this experience was related to their willingness to shed preconceived ideas about elders in the NH.

The second most significant theme revealed in the group discussions surrounded the student's feelings about being in a nursing home. The students especially recognized the difficult workload for many of the staff members, and were concerned that this environment was not always optimal for care. Apparently, this NH experience illustrated for many of these students the more difficult aspects of caring for the elderly, which seemed evident when one student commented that going to the NH was a "stark look at reality." Although most of the student's comments remained positive in nature 10 months after this experience, others continued to express that this type of setting was 'disheartening,' and therefore, would not be able to work in a NH on a full-time basis. Most importantly, in spite of some of the negative perceptions shared, the students clearly expressed that this experience changed how they approached older adults during their clinical experiences and how they will approach the elderly in the future.

Conclusion

The physical therapy students who participated in the Partnership program generally felt quite positive about this experience, and strongly believed that future physical therapy students should participate in the same or similar programs. Thus, it appears that the goals of the Partnership program were met. In summary, two of the physical therapy students seemed to best capture the feelings for all those who participated by stating:

"That experience [seeing a terminally ill resident] that I gained in the NH walked away with me into the clinic – it was amazing how everything comes back centerfold. You eventually meet everything in the center – it was so touch-

ing. That was one of the best experiences I ever had - I even wrote in my journal about it...”

“For me it was more of a learning experience. If you don’t just go out and try something, you’ll never know what it is like until you do. And, like I said I had never been to a NH and I always heard negative things about it. But, these were other people’s perceptions – not mine. And I know being here at north GA and going out and doing things is a learning experience in and of itself – if you never try the it’s your loss. You can only gain from this kind of experience.”

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discussion

Discussion of Symposium 1:

University–Community Collaboration in Gerontological Education

Jo George

It is predicted that students entering health fields will spend 75% of their work hours caring for older adults who have unique needs. Students from all disciplines can benefit from the awareness of the financial needs, lifestyle requirements and other unique needs of elders because they will become lawmakers, bankers, administrators, business people and advocates for our aging population. Youth of today will live longer so it is important, and very much to their advantage, to form a positive and realistic view of what aging is about so they will age with confidence and realistic goals. Building a base of positive attitudes toward aging can best be achieved through coordinated efforts of universities and communities. Recognizing there are issues and instructional opportunities that cannot be address in the classroom or read in a text book, collaboration between faculty, student and community promotes realistic experiences.

Georgia State University has kept four objectives in mind as they have invested in community partnerships. They have focused on educating students, research, sharing information and accessing funding. Their prime location in an urban area near government offices and business promotes communication and facilitates accessing resources and professional organizations. They are able to hold public forums that bring together lawmakers, community leaders and professionals to discuss issues and solutions that can be mutually beneficial.

Private organizations, and care facilities as well as government offices provide information about regulations and quality of life for the elderly. They provide opportunities for students to conduct research and in return students share the results. Students provide training to employees and planning assistance. Through real life learning experiences the student can build a career network for the future. The student gets a sense of fulfillment and heads back to the classroom with a depth of knowledge he or she would not otherwise have. As one student stated, “this may not be the perfect internship but you can still learn from it.” Students can use the opportunity to exercise their intelligence and creativity in order to meet specific needs.

The community benefits from researchers who donate time and feedback. Businesses and organizations appreciate the extra help students provide and they feel they are giving back to the learning community. The university benefits by bringing together different disciplines to work toward a common goal and provide new learning opportunities for students and enhance the quality of research they sponsor.

North Georgia College and State University is in a very different situation. Dahlonega is in a rural environment. Opportunities are limited and resources not so available as in urban Atlanta. Faculty was encouraged to identify ways their students from different disciplines could be involved in a partnership with Gold City Nursing Home. Most participating students were nursing or physical therapy students and it was disappointing that more disciplines were not involved. Although students were asked to make beds and clean they were able to use creativity to individualize activities appropriate for their assigned residents. They found staff and residents appreciative and gained an appreciation for the unexpected resiliency and cognitive awareness of many residents.

An activity introduced to Gold City by North Georgia College and State University faculty and students was a Second Wind Dreams Program (SWD). SWD is analogous to "Make A Wish Foundation's" dream fulfillment program for terminally ill children. Residents' dreams are made a reality in an effort to boost morale. The Bible says, "without a dream people perish." We know that a lack of dreams and goals can have adverse physical and mental consequences. Fulfillment of dreams stimulates residents and their lives are enhanced. SWD attempts to encourage residents in elder care to dream and brings them to the attention of society. Residents' dreams fall into five categories: relationships 12%, reliving past experiences 14%, specific needs 22%, life long 6% and 45% have to do with having fun. Are they telling us something? Students saw the results of dreams coming true. They witnessed a decrease in depression, community awareness and experienced unexpected feelings of attachment to residents.

To complete requirements for my gerontology certificate and with the help of Social Worker, Suzanne Repp and Assistant Director, Olivia Bragg, I introduced the Second Wind Dreams Program to Union County Nursing Home in Blairsville, Georgia. We had a definite program to follow and were fortunate to have the support of the administration. We had staff development sessions for department heads then for staff. The beauty of the program is that all the staff is involved in identifying dreams for residents. Two Dream Weavers were named at the nursing home. The resident names a staff member to accompany them on their dream trip. This is release time for them and gets a lot of support from them. Dreams usually need a busi-

ness and family member to make them reality so we spoke at civic clubs and organizations. During the time dreams were being fulfilled staff morale improved and smiles shone on the faces of recipients.

The collaboration between North Georgia College and State University and Gold City Nursing Home was a success. A major result for students was their change of attitude. One student stated, “I have a new focus concerning the elderly and a greater appreciation for my own parents.” Others voiced feelings of being needed and said they had more patience with the elderly. Most of all the students gained a new appreciation for the overworked staff. Residents benefited from the increased attention and relationships with students. The nursing home administration benefited from free labor and resources they received from the university. The university wins with additional learning experiences they can offer their students. It is unfortunate that the administration was less than 100% involved but success will increase their support. It is to be hoped that students from other disciplines will become involved.

Everyone involved agrees that this collaboration is a win-win situation. Although the partnerships were very different the students felt that their experience was successful and they all worked toward the same goal – learning more about aging. They all exhibited a sincere desire to make a difference in the quality of life for the elderly by changing perceptions that can influence lawmakers and caregivers. If one university causes 20 students a year to adopt a more positive attitude toward aging in ten years it will have made a difference in 10,240 people. Multiply this by ten universities and they will influence 102,400 people. From this number will come future caregivers and lawmakers who will influence the quality of life for the elderly.

discussion

Discussion of Symposium I: University-Community Collaboration in Gerontological Education

**Kathryn D. Fowler, Executive Director, Athens Community
Council on Aging**

**Melany Sattler, M.S.W., Adult Day Care Director, Athens
Community Council on Aging**

We extend our heartiest congratulations to the faculty and students who have made these Symposium presentations. You are scaling the ivory tower walls to strengthen both the academic and practicing worlds of gerontology.

We represent a private, non-profit, multi-county direct service organization involved in nutrition programs, volunteer support, job training, transportation, in-home care, advocacy, insurance counseling, care management, and adult day care operation. We are strongly linked with the University of Georgia and the Gerontology Center, whose first Director, Dr. Robert Wray, formed the coalition which founded the agency in 1967. Today, thirty-five years later, faculty serve on our Board of Directors and program Advisory Councils, students complete internships, we are research partners, and our staff teach classes and serve on University task forces and grant Advisory Committees.

It has been our experience that collaboration improves both the quality of education and services. For two years, the Gerontology Center has teamed with our agency (ACCA) to present Town and Gown Seminars free to the public and taught by University of Georgia and Medical College of Georgia faculty and agency personnel. ACCA in return brings practical knowledge to the classroom with presentations on Alzheimer's Disease, caregiving, non-profit management, volunteer recruitment, and board development.

We have gathered our thoughts concerning these presentations and will discuss collaborations and partnerships, ideas for making the practicum experience valuable, mutual benefits to the university and community, and recommendations to the academic community from the perspective of those who work with older adults on a daily basis.

Collaboration/Partnership

The Georgia State University faculty paper included this sentence: “How often have we viewed the organizations as full-fledged partners in the education process and sought to nurture these relationships?”

Nurturing the relationship takes effort and belief in its value. Once established, it is critical that collaborations be supported through staffing changes in both the University and the community agency.

Student interns allow many community organizations to go further and do more for the people they serve and to serve more people than would otherwise be possible. Building an internship which includes personal and clinical experience expands the learning process, ultimately producing better clinicians and specialists.

Our experience indicates that strong involvement is needed from faculty as well as the sponsoring University. It is critical that faculty understand the agencies where students are placed and the work of those agencies. Both parties must be clear on expected roles and outcomes for the student.

In return for their efforts, faculty have access to “real world” examples which make the classroom learning experience more valuable for the students.

Real World Experience or “Actual Exposure”

The University/community partnership allows students exposure to the community they live in. In this college community of Athens, Georgia, it is easy for students to be unaware that this is a small town and a close-knit community once you remove 35,000 students who are temporary residents.

Community agencies demonstrate the work they do and communicate unmet needs to the University. Interns and faculty gain an increased understanding of the community and the network within which the agency functions.

Students see the human beings behind the research and the textbooks. Meeting and working with individual older adults puts faces to numbers and theories and helps them understand that human lives are affected by services and by the lack of services.

Value of Practicum Experience, Internships, and Volunteerism

We want to reinforce the presentations which found that time spent “just volunteering” is valuable. Non-clinical work may not lend itself to clinical outcome recording but has benefits for the service recipients, the students, and the agencies.

The North Georgia College and State University graduate program for Physical Therapy demonstrated this effect. The students’ experiences dispelled myths about older adults and personalized the concept and reality of aging. The older adults they were with enjoyed their energy, the diversity of the students, and the individual attention.

The Physical Therapy students stepped outside the clinical education role and will carry the benefit of this experience and these relationships with them into future professional settings.

Mutual Benefits and Costs

Benefits and costs must be roughly equal over time for both parties in the university-community collaboration.

The costs to the university have been well-enumerated in the papers presented: resources spent in giving services which do not meet defined research or educational goals, faculty supervision required, preparation work to ensure success, and time spent in collateral activities where faculty serve as advisors, volunteers, and community participants.

The community in turn contributes significant staff resources not funded by grant or contract funds or by the university, space and the tools to accomplish the task at hand, decades of experience, our contacts, our influence, and our reputations in the community which can open doors.

The benefits of collaboration far outweigh the costs. The university receives staff support, sites, subjects, and student mentoring. In return, the research conducted informs the community of best practice ideas which foster quality improvement and development of new services. Much of the research presented at this Symposium also validates the role of direct service staff, linking relationships between staff and residents with quality of care and linking quality of care to pride in one’s work and commitment to excellence.

Student internships and practica allow service expansion, augmenting the work of limited staff and enhancing the quality of service delivery. The experiences also have a profound affect in helping students separate misconceptions about older adults from truth. Additionally, students benefit from and become a part of the existing networks between staff and agencies, giving them an invaluable tool for their professional development.

The partnership enables community staff to continue intellectual growth through the opportunities we are provided to teach, advise, and learn. We are exposed to new ideas, and the very act of sharing what we do enables us to step outside our daily roles and evaluate our effectiveness.

Recommendations to the university community for enhancing the collaboration

- The development of a business plan as discussed in the Georgia State University faculty presentation is an excellent start. Although many of the community partners are non-profit organizations and most, if not all, are service organizations, they must operate like businesses or fail. We must always be conscious of having adequate resources to complete any task we begin.
- Share your expectations of the partnership or project. Be certain we understand what you need to receive for your efforts.
- Leave us with templates, tools, replicable services, or useful research which can be readily applied to the work we do.
- Allow students to experience the agency thoroughly and to know older adults. Although some of the tasks they perform may not be clinically related to their study, experience with those we serve and with the daily tasks of running a community organization will enhance their professional development and will help them determine where they are most comfortable and fulfilled.
- Partner with us in ways other than student placement, which is labor intensive for the community agency.
- Know the agencies and their functions, and ensure continuity as you have faculty transition.
- Value what the organization can bring to the collaboration.

Conclusion

We end by returning to the quote from the Georgia State University faculty presentation: “How often have we viewed the organizations as full-fledged partners in the education process and sought to nurture these relationships?” The answer is that this nurturing partnership appears to be happening more now than ever since the 1960s when universities reached out to found non-profit organizations to meet local needs.

The partnership makes the university and the community stronger and prepares the gerontologists who will care for us in the future.

symposium 2

Nutrition and Health Promotion Interventions in Older Adults

University of Georgia: Dr. Mary Ann Johnson

Introduction

We partner with many agencies and individuals in Georgia to develop, implement and evaluate nutrition and health promotion programs for older adults receiving Title III services. Under Title III of its authorizing legislation, the Administration on Aging's Elderly Nutrition Program (ENP) is intended to provide nutrition education and to improve the dietary intakes of older adults. More than 3 million meals are served daily across America and more than 38,000 people in Georgia receive these services each year. Elderly Nutrition Programs serve vulnerable, underserved older adults at high risk for health and nutrition problems. In our partnerships with the Georgia Department of Human Resources, Georgia Division of Aging Services, Georgia Senior Centers, the Northeast Georgia Regional Development Center and Area Agency on Aging, and the Centers for Disease Control and Prevention, we found a high prevalence of obesity, diabetes, hypertension and heart disease (>30%), low intakes of dairy foods, fruits and vegetables, as well as biochemical evidence of vitamin deficiencies (Accettura, 2000, Aspinwall, 2001, Brackett 1999, Cheong et al., 2002, Fischer et al., 1999, Johnson et al., 2000, McCamey et al., 2002).

Some of the most common nutrition problems among older adults in Georgia's Elderly Nutrition Program are that at least 75% eat less than 5 fruits and vegetables daily, and 60% do not know that 5 fruits and vegetables are recommended daily. 60% consume 1 or less servings of milk daily which may increase risk of osteoporosis. 30% have diabetes, 50% are hypertensive, 8% suffer from vitamin D deficiency, 12% suffer from vitamin B-12 deficiency and 30% have vitamin B-6 deficiency. Improving these risk factors for poor nutrition and health status is difficult because 30 to 60% have an illness or condition that interferes with eating, do not feel they have enough money to buy food, eat alone most of the time, take three or more prescribed medications daily, and/or are not always able to shop, cook or feed themselves. Most of the older adults we serve have several chronic diseases, poor function status, and take multiple medica-

tions that require consideration when promoting dietary and behavioral changes.

We formed an Advisory Panel with specialists in nutrition, chronic disease management, diabetes management, bone health and osteoporosis management, exercise, pharmacy, health promotion, behavioral change and gerontology to help us design our nutrition and health promotion programs. Information about our Advisory Panel and our nutrition and health promotion programs can be found on our website: Nutrition for Older Adults' Health (<http://www.arches.uga.edu/~noahnet>).

In this symposium, Allison McCamey will discuss a statewide intervention that led to improvements in several nutrition, physical activity, and fitness indices. Jennifer Cheong will discuss an osteoporosis intervention that improved diet-related behaviors and promoted physician consultation. These programs demonstrate that our multidisciplinary partnerships and evidence-based health promotion programs do lead to documented improvements in nutrition, physical activity, and function of vulnerable older adults.

symposium 2

Preliminary Findings from a Statewide Community Intervention to Improve Nutrition and Physical Activity of Older Georgians.

M. Allison McCamey, Jennifer A. Massoni, Nicole A. Hawthorne, Sudha Reddy, Michelle Lombardo, M. Elaine Cress, and Mary Ann Johnson

Abstract

The goal of this community-based, statewide intervention program was to improve the nutritional status, functional ability, and physical activity of older adults participating in Title III congregate meal programs in Georgia. A convenience sample ($n = 501$, mean age = 76, 17% men, 83% women, 65% Caucasian, 35% African American) completed the pre-test, a series of nutrition education and physical activity sessions, and the post-test. These measures showed significant improvements after the intervention ($p < 0.05$): knowledge that 5 servings of fruits and vegetables are recommended daily (from 34 to 64%), consumption of vegetables, not including potatoes, carrots, or salad (from 1.6 to 1.8 servings/day), knowledge that saturated fat increases the risk of heart disease (from 55 to 77%), walking speed in 8-foot-Up-and-Go (from 9.8 to 9.1 seconds), and performed leg exercises in the past week (from 55 to 82%). The program was rated as very good or excellent by 64% of the participants. In conclusion, this intervention improved knowledge and behaviors related to nutrition and fitness.

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Introduction

Adequate nutrition and physical activity is essential for maintaining health, functional independence, and quality of life. National public policy such as Healthy People 2010 (US DHHS, 2000), the USDA's Food Guide Pyramid and Dietary Guidelines for Americans (USDA, 2000), and the Surgeon General's Report on Physical Activity and Health (US DHHS, 1996) have promoted messages designed to prevent disease and improve health and quality of life for all Americans. Despite the surge in social marketing campaigns, many older adults, and Americans at large, are not meeting these recommendations. The Behavioral Risk Factor Surveillance System (BRFSS) reported that in 1998 only 21.2% of adults 65 years of age and older in Georgia consumed 5 or more fruits and vegetables (BRFSS, 1998). In an additional report in 1999, data indicated no leisure-time activity in 41.5% of Georgians 65 years or older, and only 19% reported being regularly active (BRFSS, 1999).

The Administration on Aging's Elderly Nutrition Program (ENP) was established in 1972 to fund nutrition and social service programs for adults 60 years of age and older. Also known as the Title III Nutrition Program, this service is intended to improve the dietary intakes of older adults, with emphasis given to those at greatest risk of nutrition problems, based on factors such as low income, physical disability, and social isolation. The ENP also provides numerous services with an emphasis on preventive intervention programs through nutrition screenings and education, as well as other health-related and social support services (Millen et al., 2002). The ENP is the largest U.S. community nutrition program for older adults, serving over 3 million meals daily across the nation, and more than 38,000 Georgians in FY 1999. An Executive Summary of Title III programs reported significant health problems within this population (Millen et al., 2002, Ponza et al., 1996). Many of these health problems, such as cardiovascular disease, hypertension, diabetes mellitus, and obesity, are related to poor nutrition and physical activity, and therefore can be potentially lessened by nutrition and physical activity interventions.

Prior research in the Department of Foods and Nutrition at the University of Georgia has exposed the high-risk status of many ENP participants in northeast Georgia, providing a snapshot of the probable characteristics of ENP participants across the state of Georgia. These studies found that more than 50 percent of participants were at high nutritional risk (according to NSI scores), and that more than 30 percent were obese, had self-reported diabetes or poor glucose control, and were hypertensive (Accettura, 2000; Brackett, 1999). These results indicate that this population is at great

nutritional risk, as well as increased risk for poor health overall, and could benefit greatly from nutrition intervention programs.

While documentation is lacking on effective nutrition education and physical activity interventions in older adults, data from national sources (Millen et al., 2002; Ponza et al., 1996) and from within Georgia (Accettura, 2000; Aspinwall, 2001; Brackett, 1999) indicate that participants in Elderly Nutrition Programs are at high nutrition risk and have impairments in activities of daily living. Thus, there is great need to develop, implement, and evaluate nutrition and health education programs based on gains in knowledge and their resulting behavior changes. The goal of this study was to evaluate the impact of a nutrition education curriculum and balance exercise intervention program designed to enhance knowledge about nutrition and fitness and to improve behaviors related to diet, physical activity, and overall health and well-being.

Methods

Institutional Review Boards on Human Subjects of the University of Georgia and the Georgia Department of Human Resources approved all procedures and assessment tools. The overall sequence of the study began with staff training, followed by recruitment of participants, obtaining informed consent, and administration of the pre-test consisting of a questionnaire and two fitness batteries. The second phase consisted of the intervention with the nutrition education and balance exercise program, and the sequence ended with the last phase, which included post-testing. Staff received training from the Department of Foods and Nutrition at the University of Georgia.

The senior center directors, county extension agents, health educators, and Area Agency on Aging staff aided in recruiting participants, scheduling interviews, and reminding participants of the days they were to participate. Depending on the particular site, one or more of these individuals were responsible for conducting the pre- and post-tests and for disseminating the nutrition education curriculum. University of Georgia staff members were available by phone to answer any questions or problems throughout the study. The only inclusion criteria were age 60 or older and receipt of congregate meals provided by the Georgia Elderly Nutrition Program. All interested persons were given an oral description of the study including the requirements, procedures, benefits of participation; participants provided written informed consent. The participants were informed of their right to withdraw from the study at anytime with no detrimental effects on the services they received from their ENP. Approximately 655 men and

women over the age of 60 were recruited from 28 counties from across the state of Georgia. During the pre- and post-tests, participants answered questions pertaining to their diet, health, physical activity, and lifestyle. Following the questionnaire, a short assessment of the participants' fitness level was obtained using the Established Populations for Epidemiologic Studies of the Elderly (EPESE) short battery form (Guralnik et al., 1994) and the Fullerton Functional Fitness Test for Older Adults (Rikli and Jones, 1999). Speaker/Leader Questionnaires were given to participating educators before and after the implementation of the nutrition education and exercise program. These questionnaires include items about their training, employment, behaviors and opinions on health, food, and physical activity.

The nutrition education and physical activity intervention program was called "Take Charge of Your Health- the Active Older Adult Speaker's Kit and Placemat Leg Exercises." These materials were developed by the Georgia Division of Aging Services and Wellness, Inc. and are available commercially from Wellness, Inc. (Duluth, GA). This nutrition education program focuses on correcting risk factors for poor nutrition in older adults and facilitating the voluntary adoption of eating and other nutrition related behaviors that promote health and well-being in older adults. The key themes of this curriculum focus on the three Take Charge of Your Health campaign messages: Take 5 a Day, Take Down Fat, and Take Action, that were established by the Georgia Coalition for Physical Activity and Nutrition (G-PAN, 2002). The curriculum also followed the principles of the USDA's Food Guide Pyramid and Dietary Guidelines (USDA, 2000). The 12 lessons include topics such as heart disease and high blood pressure, calcium and osteoporosis, diabetes, and nutrition and cancer prevention. The leg exercises included toe raises, side leg lifts, leg curls, knee raises, and straight leg extensions. Modifications for those in wheelchairs, or those otherwise unable to stand, were also included. These exercises were graphically designed on a placemat to help encourage participation and visual cues. Classes were given 1 to 2 times per month and participants were encouraged to perform the leg exercises at home or at the Senior Center on a daily basis.

Nutrition and Fitness Assessments

Dietary intake of fruit and vegetable consumption of participants, for both the pre- and post-test questionnaires, was assessed using 6 questions taken from the Behavioral Risk Factor Surveillance System (BRFSS, 1999). The BRFSS is a state-based surveillance system, administered in collaboration with the Centers for Disease Control and Prevention. Information

from the Behavioral Risk Factors Survey is used to track trends in behavior changes among the population, determine priority health issues and develop plans to address them, and to monitor the effectiveness of interventions. These questions assess the frequency of consumption of certain fruit and vegetable groups according to daily, weekly, monthly, or yearly time frames. The total fruit and vegetable consumption was calculated by summing the frequency of consumption of the six items from the core BRFSS food-frequency instrument. Knowledge and behavior questions related to dietary intake, food behaviors, and exercise/physical activity was addressed by selected questions from the BRFSS. Other questions addressed milk consumption, fat knowledge, and label reading and were adapted from Elbon (1998).

Functional ability was assessed using the Established Populations for Epidemiologic Studies of the Elderly (EPESE) short battery (Guralnik et al., 1994). This tool was developed for assessing mobility in older adults by measuring balance, strength, and gait speed through such tasks as standing balance, chair stands, and an 8-foot walk. The Fullerton Functional Fitness Test for Older Adults (Rikli and Jones, 1999) was also used to test the functional ability of program participants. This test battery was designed to obtain normative data regarding physical and functional performance of community-dwelling older adults. This test also identified criterion-reference standards needed to maintain the ability to perform 'desired activity goals.' There are six components to the test, each reflecting a physical parameter of functional fitness and activities of daily living. The tests included in this battery are based on the guidelines established by the American College of Sports Medicine and are safe for the majority of community-dwelling older adults without prior medical screening; however, we did not use the 6-minute walk test because of concerns about obtaining approval from the institutional review boards and having space to perform this test at the various senior centers.

Statistical Analysis

Data was analyzed using the Statistical Analysis System (version 8.2; SAS Institute, Cary, NC). To ensure accuracy, all data was entered twice and a comparison was generated to detect any discrepancies before the analyses were performed. Data from the pre- and post-tests were compared using paired T-tests and Chi-square analyses to determine if any changes were of statistical significance ($p < 0.05$). Quantitative and qualitative information from open-ended questions was used to assess participant and educator satisfaction with the program.

Results

All participants were enrolled in Elderly Nutrition Programs in one of 28 counties across Georgia. Six hundred and sixty-one participants enrolled in the study (mean age 76, 17% men, 83% women, 65% white, 35% African American, and less than 1% Hispanic, Asian, or other) and 501 participants completed both the pre- and post-test measures (mean age 76, 17% men, 83% women, 65% Caucasian, 35% African American).

Pre and post test comparisons of participants summarize the effect of the intervention on the outcome measures. Self-reported health increased from a mean value of 3.07 ± 0.9 to 2.97 ± 1.0 ($p = 0.04$). These values represent a move from the average ranking of good (3) to very good (2). There was a trend ($p = 0.07$) for improvement on the importance of being active on one's health, from 1.99 ± 0.6 to 2.05 ± 0.6 , indicating a positive shift from somewhat important (1) to very important (2). There was no significant change in the participants' report of health troubles standing in their way of doing things ($p = 0.76$).

Of the six questions examining fruit and vegetable intake, only one was significantly increased. The mean servings per day of vegetables not including carrots, potatoes, or salad increased from 1.63 ± 0.1 to 1.78 ± 0.1 ($p = 0.02$). Knowledge that five or more servings of fruits and vegetables should be consumed each day rose from 34 to 64% ($p = 0.0001$). Cooking methods for vegetables did not significantly change, with steaming or boiling being the method of choice by 96% at pre test and 95% at post test. Mean daily milk consumption was also found to have a statistically significant improvement (1.29 ± 0.9 vs. 1.37 ± 0.9 , $p = 0.05$). The type of milk consumed improved, although not significantly ($p = 0.07$), from 66% of participants drinking 2%, 0.5-1%, or skim milk at pre test to 73% at post-test.

Participants reported an increase in behaviors that reduce the risk of developing heart disease or stroke. Eating fewer high fat or high cholesterol foods improved from 74 to 85% at post testing ($p = 0.0001$) and they also reported exercising more (73% vs. 86%, $p = 0.0001$). A significant change was seen in the cooking method of meat, chicken, or fish preparation with more people switching from frying to broiling and baking. A behavior change was seen in the number of participants who read nutrition labels, increasing from 58 to 66% ($p = 0.01$). Knowledge regarding fat and heart disease improved from 55 to 77% of participants knowing saturated fat increases risk at post test ($p = 0.0001$).

Questions assessing physical activity showed many improvements. Participants who participated in any type of physical activity in the past

month increased from 82 to 87% ($p = 0.03$). Those who performed the balance exercises in the last month and week increased from 54 to 88% and 55 to 82%, respectively ($p = 0.0001$). Knowledge that 30 minutes of physical activity should be done most days of the week significantly improved from 53 to 68%, ($p = 0.0001$). There was a trend for participants to report that the mean number of blocks they could walk without stopping improved after the intervention (2.49 ± 1.5 vs. 2.59 ± 1.5 , $p = 0.10$). Participants who reported being active most days of the week increased from 80 to 88% after completion of the intervention ($p = 0.01$). In addition, three barriers to physical activity significantly decreased by two- to three-fold ($p = 0.0001$). Those who reported not having time decreased from 16 to 5%, not liking to be active decreased from 18 to 9%, and feeling it was not safe to be physically active decreased from 15 to 5%. There was no significant change in those reporting a health condition that keeps them from being active ($p = 0.09$) or that it costs too much to be active ($p = 0.56$). Walking speed, as assessed by the Fullerton Functional Fitness Test, also showed an improvement ($p = 0.001$), with participants' time decreasing from 9.77 ± 3.7 to 9.10 ± 4.6 seconds.

Discussion

At the national level it is recommended that facilities and programs with Elderly Nutrition Programs are ideal settings for nutrition and health promotion programs in the older adult population (Millen et al., 2002). Most research on ENP clients is focused on documenting poor nutritional status and nutritional risk factors (Millen et al., 2002). The evaluation of combined nutrition and physical activity interventions targeted to older adults in the Elderly Nutrition Programs in the Southeast United States is lacking. Therefore, this evaluation is of great value for both the well-being of the older adults served and for the state in its quest to provide nutrition and health promotion activities and services for this population. This nutrition and health promotion program was successful and the major outcomes were: 1) positive changes in knowledge related to nutrition and physical activity, 2) improvements in some health behaviors related to diet and physical activity, and 3) decreases in possible barriers to physical activity. Of the 31 items assessed, 18 resulted in statistically significant improvements ($p < 0.05$).

The underlying messages for this program were from the Georgia Coalition for Physical Activity and Nutrition (G-PAN, 2002) which emphasizes increasing physical activity, increasing fruit and vegetable consumption, and decreasing dietary fat. Each of the three key areas of the Take Charge of Your Health campaign message showed statistically sig-

nificant improvements, especially in the knowledge of health promoting behaviors ($p = 0.0001$). The percentage of those who knew the recommendation for five servings of fruits and vegetables each day nearly doubled, from 34 to 64% after the intervention. Knowledge relating fat intake, specifically saturated fat, and heart disease increased from 55% at pre test to 77% after the program. The recommendation for at least 30 minutes of physical activity most days of the week was known by 68% of participants upon completion of the intervention program versus 53% prior to the program. Knowledge of appropriate health behaviors is only one step in improving health-related behavior. Krinke (2001) notes that the dissemination of nutrition information is only part of the equation, and that skill development and increases in instructional knowledge are almost always necessary to produce behavior changes.

While there were gains in knowledge, not all of these areas resulted in corresponding improvements in behavior. For example, although fruit and vegetable knowledge markedly improved, it did not result in an increase in self-reported intake for most groups. The one category that showed a statistically significant improvement, the servings per day of vegetables excluding carrots, potatoes, and salad, had a mean improvement of only 0.15 servings per day. Others have reported similar changes in fruit and vegetable intake following community-based interventions, as reviewed by Ciliska et al. (2000). Cohen et al. (1998) found that perceived barriers to fruit and vegetable intake increased with decreasing income and education and were related to lower consumption of fruits and vegetables. The results of this evaluation highlight the need to target and address the perceived barriers to fruit and vegetable intake in this population. Perhaps incorporating this information will result in a decrease in perceived barriers and an increase in intake, similar to that seen in the results of barriers to physical activity, which will be addressed shortly. Knowledge about fat and the need to decrease dietary intake did result in many positive behavior changes. There were improvements ranging from 3 to 11 percentage points in the number of participants who reported they ate fewer high fat and high cholesterol foods, were less likely to fry meat, chicken, or fish, read nutrition labels, or switched to a lower fat milk. In addition, there was a 13 to 34 percentage point increase in the three questions assessing physical activity. These findings indicate that this sample of older adults can and did improve their nutrition and physical activity behaviors. Although we were unable to find a similar study in ENP clients, our findings are similar to those reported in other samples. For example, Goldberg et al. (1990) found that many older adults reported making modifications in their diet to reduce risk factors associated with chronic diseases. Hackman and Wagner

(1990) also reported improved intake in targeted foods, such as low-fat dairy foods and fruits and vegetables, after participation in an educational community gardening project.

The other key area where improvements were made was that of perceived barriers to physical activity. This intervention was successful in addressing and dispelling some of the myths and misconceptions associated with perceptions of barriers to physical activity. Three of the six barriers addressed, time constraints, not liking to be active, and safety concerns, showed statistically significant improvements ($p < 0.0001$) and led to an increase in the percentage of participants who reported being active on most days of the week (80 vs. 88%, $p = 0.01$). There was also a non-significant decrease in those who reported having a health condition that kept them from being active. At both the pre and post test, less than 2% felt that cost was a barrier to exercise and only 3% felt that its too late to improve ones health. King (2001) suggests that effective interactions for promoting regular physical activity in older adults are dependent on gaining an understanding of the factors that influence activity, and then taking steps to address these issues. Together these positive improvements suggest that these older adults could make even further improvements in their physical activity because of a decrease in their perceived barriers.

This study had some limitations. Self-reported dietary intake is difficult to assess in this population, due to factors such as low literacy and education levels, low socioeconomic status, age-related declines in sensory functions such as hearing and sight, and possible declines in memory and cognitive functioning. While efforts were made to modify the curriculum to meet the varying educational levels of participants, further adaptations remain necessary in order to facilitate the most effective teaching and learning methods for this population. Secondly, the coordination of a large statewide program with numerous people who have varied experience in an applied research setting may have affected data collection. Providing training in data collection methods for staff at all sites involved in the intervention minimized this potential limitation. The educators consisted mainly of Area Agency on Aging staff, including registered dietitians, nurses, county extension agents, fitness instructors and health educators, as well as Senior Center directors, but not all of the educators may have had formal training in both nutrition and physical activity. This potential barrier was minimized by providing training on the use of the curriculum, as well as access to professional staff from the Division of Aging Services, the University of Georgia Department of Foods and Nutrition, and Wellness, Inc who were available to answer any questions. Finally, this was the first state-wide attempt to evaluate functional status by collecting direct measures of fitness

using well-validated methods designed specifically for assessment of older adults, such as the Fullerton Functional Fitness Test for Older Adults (Rikli and Jones, 1999) and the Established Populations for Epidemiologic Studies of the Elderly (Guralink et al., 1994). We are still evaluating these data and only reported one measure in this report (8-foot Up-and-Go). In the future additional training should be conducted before these measures are used, because we eliminated 15.8% of the data for the 8-foot Up-and-Go due to our concerns about reliability.

There are many implications of the findings of this study. First and foremost, this population of older adults is interested in nutrition and physical activity and can make knowledge and behavior changes that may lead to benefits in their health and quality of life. Qualitative information from open-ended questions was used to assess participant satisfaction with the program. Some of the most common responses include, “program makes me aware of my eating behaviors and what I’m supposed to do,” “improved my balance, walking, and flexibility,” and “made me feel better.” Evaluations from the Speaker/Leader Questionnaire indicate that 75% of educators strongly agreed that they would recommend the curriculum to colleagues working with older adults, and 81% strongly agreed that the curriculum enabled them to provide a better quality of service to Senior Center participants.

While the program was successful, there is still room for improvements, especially in the area of facilitating behavior changes related to diet. National public policy, such as Healthy People 2010, has emphasized the role of nutrition education and physical activity in maintaining health in people of all ages (US DHHS, 2000). Therefore effective nutrition education and physical activity intervention strategies are essential for improving health, nutrition, and fitness in the older population. These reasons, in combination with the documented success of this program, support the continuation and expansion of nutrition education and physical activity intervention programs to other older adults.

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symposium 2

Preliminary Findings From an Osteoporosis Risk Reduction Intervention for Older Adults in Elderly Nutrition Programs

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Abstract

Our objective was to reduce modifiable osteoporosis-related risk factors (MORR) in older adults receiving Title III nutrition services. A convenience sample in northeast Georgia (n = 71) completed heel bone mineral density (BMD) tests (Hologic, Bedford) at Time 1 (pre-intervention) and osteoporosis (OP) risk assessment questionnaires at Time 1 and Time 2 (post-intervention). An OP education intervention focusing on MORR was implemented. Time 1 and Time 2 data were compared by using Chi-square and paired T-tests to determine the statistical significance of any changes ($p < 0.05$). At Time 1, 60% had either osteopenia or OP (T-score ≤ -1.0). At Time 2, 59 participants completed the questionnaire and reported they talked to their doctor about heel BMD results (42%) or OP (41%); ate more calcium-rich (31%) or calcium-fortified foods (20%); started taking a calcium (23%) or vitamin D supplement (11%); and practiced balance exer-

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cises at home (56% of participants). At Time 2, the number of participants taking a calcium supplement was more than doubled ($p < 0.05$), and the number of MORR was decreased by 1.3 (from 4.2 to 3.0 out of 6, $p < 0.0001$). Ninety-eight percent of participants rated the program as good or excellent. In conclusion, this OP intervention reduced MORR in older adults.

Introduction

According to the National Osteoporosis Foundation (National Osteoporosis Foundation, 2002), up to 44 million Americans have osteoporosis or low bone mass. Osteoporotic and associated fracture costs are enormous, costing the nation \$17 billion in national direct expenditures (hospitals and nursing homes) (National Osteoporosis Foundation, 2002). In older adults, increasing calcium and vitamin D has been shown to decrease bone mineral density (BMD) loss and risk of fractures (Reid, 1995, Prince, 1995, Recker, 1996, Looker, 1993, Chapuy, 1992, Dawson-Hughes, 2000), while decreasing the risk of falls may also reduce the risk of fractures (Cumming & Klineberg, 1994). Thus, osteoporosis risk reduction might be particularly beneficial in elderly populations with low calcium and vitamin D intake. One such population includes older adults who participate in Elderly Nutrition Programs (ENP) and receive Title III services such as meals, nutrition education, and other health promoting activities. Brackett (1999) found that ENP participants in Georgia have low intakes of calcium and vitamin D. Eleven percent and 25% had vitamin D deficiency and marginal vitamin D status, respectively. No participants met the Recommended Dietary Allowance for vitamin D (Brackett, 1999). Thus, the focus of this study is to reduce the risk of osteoporosis in ENP participants through a nutrition and bone health education program. The objectives of this study were to determine the: (1) prevalence of low BMD as estimated by heel BMD test, (2) prevalence of MORR, and (3) effectiveness of a nutrition and bone health education program that is tailored for a low-income, low-literacy elderly population. It was hypothesized that the number of MORR would be reduced after the education program. For the purposes of this study, MORR were defined very broadly to include potentially modifiable behaviors directly or indirectly related to osteoporosis, low bone mass, and/or risk of falling such as not consuming at least 3 servings of calcium-rich foods per day, not taking calcium and/or vitamin D supplements, low physical activity level, high risk of falling at home, and use of tobacco products.

Methods

Approval for the study was obtained from the Institutional Review Boards of the Georgia Department of Human Resources and The University of Georgia for all procedures.

Recruitment of the participants

A convenience sample of 71 ENP participants aged 60 and above were recruited through Senior Center directors who helped to distribute flyers about the study. There were no exclusion criteria because one condition of the contract with our Area Agency on Aging was to make the heel BMD testing and nutrition education program available to all Senior Center participants. This study was conducted in Georgia in Walton, Madison, Oconee, and Greene counties because of their interest in the project and availability of their center at that time. Before the protocol began, the consent form was read aloud to the participants and written informed consent was obtained individually from each participant.

Procedure

At Time 1 (pre-intervention), participants had their heel BMD, weight, height, and knee height measured, and answered nutrition and health questions. The questions were read aloud to the participants and trained interviewers recorded their answers. Heel BMD and T-scores were determined with an ultrasound bone densitometer (Hologic Sahara Clinical Bone Sonometer, Bedford, MA). Each participant received a copy of their heel BMD results, an explanation of their heel BMD results (low risk, moderate risk, or high risk for experiencing a future fracture), and was strongly encouraged to take the results to their healthcare provider. A 3-part curriculum designed to reduce MORR among low-literacy older adults was implemented over the next three months. The 3 lessons were given on 3 different days approximately 4 weeks apart over a period of 3 months and included: (1) What is osteoporosis, (2) Calcium and vitamin D, and (3) Fall prevention and medications. Balance exercises from NOF were performed at each lesson (NOF, 2002). The following six categories were considered as modifiable risk factors for osteoporosis or falling (yes/no for each category): (1) Low intake of calcium rich foods (quantified as eating less than 3 servings of calcium-rich and/or calcium-fortified foods per day); calcium-rich foods included milk (as a beverage or with cereal), yogurt, cheese, mustard, tur-

nip, or collard greens, and canned salmon; calcium-fortified foods included calcium-fortified orange juice and calcium-fortified cereals; (2) Non-use of calcium supplements (defined as not taking a supplement with calcium; for the purposes of this study, multivitamin supplements were not considered as calcium supplements); (3) Non-use of vitamin D containing supplements (defined as not taking either a multivitamin supplement or any capsule or tablet that contains vitamin D); (4) Lack of physical activity (defined as exercising for less than a total of 150 minutes per week, regardless of duration of exercise sessions and number of exercise sessions per week); (5) High risk of falling at home (defined as any one of the following: not anchoring throw rugs, not having grab bars in bathroom, not having non-skid tape or non-skid mat in tub or shower area, and/or not turning on the light or using a night light when getting out of bed at night); and (6) Current use of cigarettes, pipes, cigars or tobacco (including tobacco chewing). This MORR score could range from 0 (no risk) to 6 (high risk).

At Time 2 (post-intervention), the same nutrition and health questionnaire that was used at Time 1 was administered to assess behavior modifications that could potentially reduce participants' risk of osteoporosis, falls, and osteoporosis-related fracture. The Statistical Analysis System was used for all analyses (SAS, Version 8.2, Cary, NC). Data at Time 1 (pre-intervention) and Time 2 (post-intervention) were compared by using Chi-square and paired T-tests to determine the statistical significance of any changes ($p < 0.05$). The primary outcome variables were the number of MORR reduced from Time 1 to Time 2, and the number of self-reported behavior changes at Time 2.

Results

Of the 71 participants who were recruited at Time 1, 59 completed the study at Time 2. At Time 1, the sample was predominantly female (90%) and white (66%). Mean age of the sample was 75.9 years old, with females being significantly older than males ($p = 0.04$). Sixty percent of the participants had osteopenia or osteoporosis (defined as T-score ≤ -1.0). Participants in the study had a mean body mass index of 29 kg/m², which was indicative of overweight status. Mean heel BMD was 0.5 ± 0.2 gm/cm², with no statistically significant differences between males and females, or between white females and black females. Figure 1 shows the number of MORR at Time 1 and Time 2. At Time 1, there were 4.2 ± 1.1 (mean \pm SD) MORR, with black females having significantly more risk factors than white females (4.8 versus 4.0, $p = 0.003$). At Time 2, the number of MORR for the sample was significantly reduced to 3.0 ± 1.1 ($p < 0.0001$). Although black

females still had more MORR than white females at Time 2 (3.4 ± 1.1 versus 2.8 ± 1.1), the difference was no longer statistically significant ($p = 0.06$). Figure 2 shows the percentage change in the six categories of MORR. After the intervention, there was an increase in the number of participants who started to consume calcium supplements (from 17% to 49%, $p = 0.0003$), and there was a trend for an increased use of vitamin D supplements (from 33% to 39%, $p = 0.13$). However, after the intervention, there were no significant changes in the percentage of participants who exercised at least 150 minutes per week (from 17% to 20%, $p = 0.64$), smoked or used tobacco (from 18% to 13%, $p = 0.43$), were at risk of falling in the home (from 78% to 88%, $p = 0.4$), or consumed at least three servings of calcium-rich foods daily (remained at 0% at Time 2). Self-reported behavior modification since attending the nutrition and bone health curriculum showed many positive behaviors (Figure 3).

Discussion

Senior Centers and other organizations that support Elderly Nutrition Programs are believed to be ideal places to deliver health promotion programs (Millen, 2002). However, a search on MEDLINE identified very little information about health promotion programs in ENPs, and no programs that focused on nutrition and bone health. Thus, this study has important implications for health promotion activities in ENPs. The most significant findings of this study were that 60% of these older adults were at high risk for osteopenia and osteoporosis based on their heel BMD results. Also, after the intervention, between 11% and 56% of the participants reported changing their behavior to reduce their risk of osteoporosis and falls by practicing balance exercises at home, talking to their doctor about osteoporosis-related issues, increasing their physical activity, changing their diet or supplement use patterns, and/or reducing their risk of falls at home. Finally, the use of calcium supplements doubled and participants significantly decreased their MORR score by more than 1 point (out of 6).

Heel BMD was conducted only at Time 1 because it takes more than 1 year for improvements in heel BMD to be reflected by the ultrasound bone densitometer (Hologic, 2002) and this intervention was conducted for only 4 months. Being overweight is associated with higher BMD and lower bone loss (Tremollieres, 1993, Versluis, 2001). However, a high percentage of participants still had osteopenia or osteoporosis. This could be due to sample characteristics such as advanced age, a high percentage of females, a high percentage of Caucasians, poor dietary patterns, and lack of physical activity.

Of all the self-reported behavior modifications, the largest positive change was in the percentage of participants who reported practicing balance exercises at home. This could be due to the distribution of handouts with a pictorial illustration of the balance exercises, and the inclusion of the balance exercises at the end of every session. Between 25% to 42% of participants talked to their physician about some aspect of bone health. Topics discussed included heel BMD, osteoporosis, exercises for bone health, and medications for osteoporosis.

There was a significant reduction in one of the six categories of MORR, namely calcium supplementation risk. Participants may have significantly increased their use of calcium supplements for several reasons. Participants were shown examples of calcium supplements and were given information on selecting calcium supplements. Also, the importance of an adequate intake of calcium was emphasized and repeated throughout the entire curriculum. Taking a calcium supplement will help the participants meet their calcium requirement, especially when their intake of calcium-rich foods is low. Also, it may reduce their risk of future fractures (Recker, 1996, Looker, 1993, Chapuy, 1992).

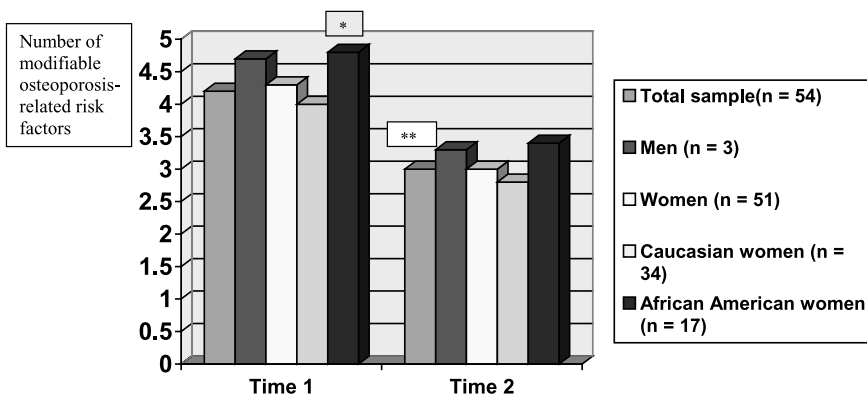
There was a lack of changes in other diet-related domains, as seen from a lack of increase in the number of participants who consumed three or more servings of calcium-rich foods after the intervention. Although the risk from low intake of calcium-rich foods remained at 100% at Time 2, consumption of some, but not all, calcium-rich foods was significantly increased by a small amount as follows: milk as a beverage (from 5.5 ± 4.3 to 7.1 ± 4.7 glasses per week, $p = 0.006$), milk with cereal (from 2.4 ± 3.0 to 3.2 ± 3.3 cups per week, $p = 0.05$), yogurt (from 2.4 ± 4.2 to 2.9 ± 3.7 cups per week, $p = 0.59$), cheese (from 1.9 ± 2.0 to 2.2 ± 2.3 servings per week, $p = 0.56$), and calcium-fortified orange juice (from 1.5 ± 3.6 to 3.5 ± 5.5 cups per week, $p = 0.02$). Subsequently, in order to increase calcium-rich food consumption among this population, the calcium and vitamin D section of the curriculum has been expanded from one to three lessons. These three lessons are (1) calcium and vitamin D from food sources such as dairy foods and certain vegetables, (2) calcium-fortified foods, and (3) calcium and vitamin D supplements.

There are some limitations of this study. The curriculum may not accommodate varied levels of competence among the participants. In order to address this issue, educators reviewed the curriculum before it was implemented at the Senior Centers. A question and answer session was included at the end of every session in order to allow participants to address issues that were not covered in the lessons. Also, not everyone attended all the sessions. In order to minimize the impact of absenteeism on behavior modi-

fication, participants were given handouts that repeated important concepts and emphasized self-empowerment. Finally, objective biological indicators of nutrition and bone health were not measured. Such measurements were outside the scope of this study. However, this would be an important area to study in the future.

There are at least three other outcomes of this study in addition to the reduction of MORR and behavioral changes made by the participants. One, results from this study demonstrated the effectiveness of using a combination of handouts, product demonstrations, and taste-testing to promote use of certain foods or supplements. For example, the increase in calcium-fortified orange juice consumption may have been the result of bringing in several brands of this orange juice to taste. Thus, it is important to include product demonstrations and taste tests in nutrition education programs for this population in the future. Two, since the conclusion of this study, we have implemented the curriculum at other Senior Centers in Georgia. Three, given the success of this curriculum in reducing MORR, the lesson plans are now available on our web called Nutrition for Older Adults' Health (www.arches.uga.edu/~noahnet). The lesson plans include text and script for the lessons, handouts, materials for overhead transparencies, pre- and post-tests, as well as references for additional reading about nutrition and

Figure 1. Number of modifiable osteoporosis-related risk factors (MORR) at Time 1 and Time 2



* $p = 0.003$ African American women had more MORR than Caucasian women

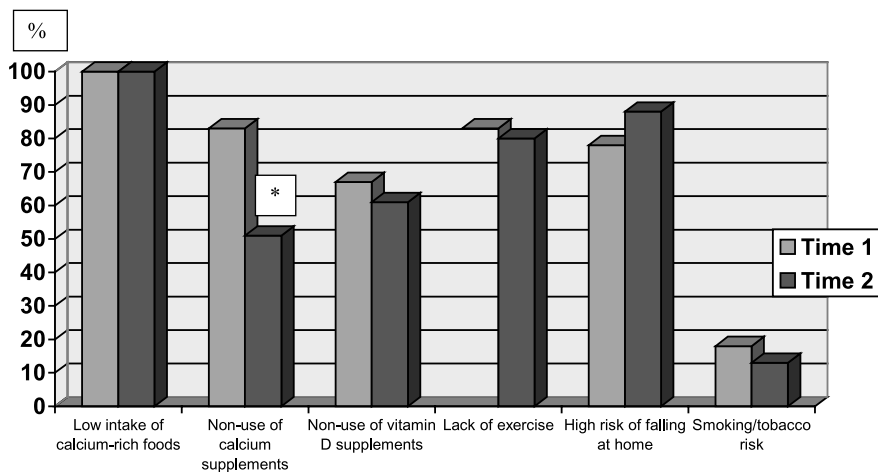
** $p < 0.0001$ as compared to Time 1

bone health. These lesson plans can be downloaded by educators from the internet without any charge. This will increase the number of ENP clients, as well as other older adults, who can benefit from the curriculum by reducing their modifiable risk factor of osteoporosis.

In conclusion, the nutrition and bone health curriculum that was designed for low-literacy, low-income older adults in this study reduced the number of MORR.

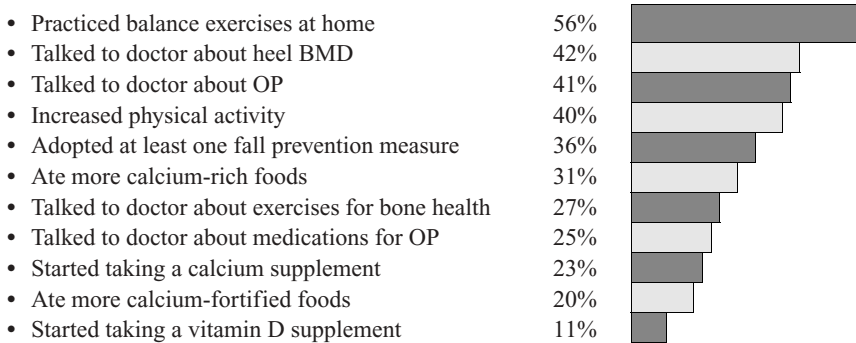
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Figure 2. Change in percentage of participants who had the six categories of modifiable osteoporosis-related risk factors



*p = 0.0003 as compared to Time 1

Figure 3. Percentage of participants who reported they tried or did the following since attending the nutrition and bone health curriculum



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discussion

Discussion of Symposium 2 Nutrition and Physical Activity Intervention in Older Adults

Kellie E. Rogers, North Georgia College and State University

Aging of America is a well-known phenomenon. Throughout the 20th century, the average age of Americans and their life expectancy have increased steadily. As the “Baby Boom” generation reaches retirement age during the next century, this aging trend will accelerate (Michigan Governor’s Council on Physical Fitness, Health and Sports, 2001). Because Americans are living longer, it is important to plan well for a long life. Aging well depends on personal health and wellness, lifestyle and finances (Linder, 2001).

Because of the physiological and psychosocial diversity of older adults, studying nutrition of the aging is challenging. All elderly people do not have the same nutritional needs and should not follow the same nutritional plan. In fact, as people get older, the more diverse they become (Nutritional needs of the elderly, 2001). Physical and body function changes take place during aging and can result in changes in nutrient needs (Linder, 2001).

There are other problems associated with good nutrition for the elderly. Many of these relate to the fact that many older adults are eating alone and are at a greater risk for poor nutrition. The purchasing, storing and preparing of food becomes more difficult over time. In addition, studies have shown that the quantity of nutritious food is voluntarily reduced as people get older. Some older adults restrict their intake in order to limit trips to the bathroom. Last, there is the issue of drug-nutrient interactions. Many prescription and over-the-counter medications may alter food intake by depressing or stimulating the appetite. Some medications may also reduce the absorption of nutrients from foods or alter the metabolism and excretion of nutrients (Linder, 2001).

Regular physical activity can play a major role in correcting many age-related declines in the musculoskeletal and cardiovascular systems. Regular exercise and other forms of physical training can help extend the time that older individuals can continue living independently (Michigan Governor’s Council on Physical Fitness, Health and Sports, 2001). How-

ever, older Americans are less likely to participate in fitness activities (Linder, 2001).

In this study, McCamey, Massoni, Hawthorne, Reddy, Lombardo, Cress, and Johnson implement a multi-county nutrition education curriculum and balance exercise intervention program. The purpose of the study is to evaluate the impact of these programs based on improvements in nutritional status, functional ability and physical activity levels of older adults and to answer the question “Would intervention lead to significant improvements?”

The researchers conducted pre-tests and post-tests on a sample of 501 older adults from 28 counties in Georgia. The only criteria for participation were to be over the age of 60 and be recipients of congregate meals provided by the Georgia Elderly Nutrition program. Testing was conducted by directors and staff of Senior Centers, county extension services, health education and area agencies on aging in some of the sites. The tests involved a questionnaire based on the Behavioral Risk Factor Surveillance System and functional ability assessment from the Established Populations for Epidemiologic Studies of the Elderly short battery.

The information presented in this study can be an important tool in many areas. Governmental agencies on aging can utilize the information gathered to assist in meal planning and distribution with congregate meals. The information can also be drawn on for distribution of educational materials through governmental agencies or private groups such as AARP to improve the health status of elderly in many other socioeconomic groups. Lastly, the information can be employed by doctors to assist elderly in planning their own meals. This research has a notable strength in its attempt to deal with the issue of poor nutrition in the elderly. Many programs simply focus on the education of caregivers for the elderly or simply telling the individual what should be done. Few seem to educate the elderly themselves on what they should do to stay healthy or why it makes a difference.

Other strengths of this study lay in the sample size and statistical analyses. It appears that the researchers were able to obtain a fairly large sample spread out over a considerable geographic area (500+ participants from 28 counties in Georgia). The paired T-tests and Chi-square analyses provide valuable evidence of statistical significance in studies of this type. A final strength was in the attention paid to accuracy. Many studies would not take the time to enter values for this large of a study more than once to reduce errors.

Despite the strengths of this study, there are some questions raised that have not been answered in related areas. Many of these questions relate to the sample used for the testing. The particular sample focuses on

one particular socioeconomic group, those who receive congregate meals provided by the Georgia Elderly Nutrition program. The fact that the sample ranges over 28 counties may have influenced the type of clients served by the Georgia Elderly Nutrition Program. This could explain the lack of representation of elderly members of the Hispanic or Asian populations.

Second, there are questions relating to the withdrawal of 160 participants who initially enrolled in the study. What factors could be controlled to limit this high dropout rate? The issues that led to this could be of importance in future studies and to the results of this one.

Another issue recognized by the researchers is the difference in knowledge and behavior. Having recognized that although there were gains in knowledge of the participants there were not necessarily corresponding changes in behaviors, the researchers did not address what could be done to improve the correlation between knowledge and behavior.

As is often the case, research leads to further questions for research. It would be interesting to see the results of a study such as this on a state-wide level or even on a national level. It would also be intriguing to see what the results of a study such as this would be over a longer time period, such as a year, five years, or even ten years. Lastly, broader inclusion requirements, such as to include all older adults not merely those who receive congregate meals provided by the Georgia Elderly Nutrition program, could provide different behavior to knowledge correlations. In summary, this was an interesting research topic that can provide valuable information regarding the impact of nutrition and physical activity intervention in older adults.

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discussion

Discussion of Modifiable Osteoporosis Risk Related Factors

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Osteoporosis is characterized by low bone density and the deterioration of bone tissue. It is a silent and progressive disease often not diagnosed until the first fracture. The incidence of hip fractures is certain to increase with longer life expectancy and the rapidly increasing aging population.

The National Osteoporosis Foundation estimates that in 2002, the number of people 50 years old and older at risk for low bone density and osteoporosis is 44 million. The estimated prevalence rate for low bone mass and osteoporosis among men is 14 million and among women 30 million. The direct cost of treating fractures related to osteoporosis is \$17 billion annually. It is a major public health issue (National Osteoporosis Foundation, 2002).

80% of those affected by osteoporosis are women. The National Institute of Health (2002) estimates that five percent of African-American women over 50 have osteoporosis and 35% have low bone mass that puts them at risk for developing osteoporosis. Ten % of Hispanic women aged 50 and older are estimated to have osteoporosis and 49 % are estimated to have low bone mass. Twenty percent of non-Hispanic white and Asian women aged 50 and older are estimated to have osteoporosis, and 52 percent are estimated to have low bone mass.

There are four steps to preventing osteoporosis. No single step will prevent it but all four may; a balanced diet rich in calcium and vitamin D, weight-bearing exercise, a healthy lifestyle with no smoking or excessive alcohol intake, and bone density testing and medication, when appropriate. (National Institute of Health Osteoporosis and Bone Related Diseases, 2002).

Calcium supplementation is usually necessary in older adults to prevent osteoporosis, but is contraindicated in hypercalciuric and hypercalcemic conditions, including hyperparathyroid conditions. Calcium reduces the rate of bone loss. Vitamin D enhances absorption of calcium from the intestine. Most multivitamins, an inexpensive and readily available source, contain the daily recommended dose of Vitamin D.

Cheong, Johnson, Lewis, Fischer, and T. Johnson identified an at-risk population who receive Title III services including meals, nutrition

education, and other health promotion activities through the Elderly Nutrition Program (ENP). The purpose of the study was to reduce the risk of osteoporosis to those in the ENP through nutrition and bone health education. They hypothesized that the number of Modifiable Osteoporosis Risk Related Factors (MORR) would be reduced after the education program. After approval for the study was obtained, a convenience sample of 71 ENP participants aged 60 and over were recruited. The Area Agency on Aging required that Heel Bone Mass Density (BMD) testing and nutrition education programs be made available to all Senior Center participants so no exclusion criteria was used. Informed consent was obtained.

Pre-intervention, participants had heel bone mass density (BMD), weight, height, and knee height measured. The ultrasound bone densitometer has an 85% or higher correlation to the dual X-ray absorptiometry of the spine and hip, which is an accurate and precise tool to assess risk for fracture (Foundation for Osteoporosis Research and Education, 2002).

The participants also answered a health and nutrition questionnaire. Intervention of three lessons on three different days over a four-month period related to the following modifiable risk factors included: explanation of osteoporosis, calcium and vitamin D, fall prevention and medications. Balance exercises were performed at each lesson.

At post-intervention, the same health and nutrition questionnaire was administered. The Statistical Analysis System was applied to all analyses. Pre- and post-intervention data were compared by Chi-square and paired T-tests to determine the statistical significance of any changes ($p < 0.05$). The primary outcome variables were the number of MORR reduced from Time 1 (pre-intervention) and Time 2 (post-intervention), and the self-reported behavior changes at Time 2.

An important strength of this study is its contribution to the assessment of MORR and prevention of osteoporosis by making BMD testing and nutrition education available to all Senior Center participants. Another strength is the implementation of the curriculum at other Senior Centers in Georgia, and the development of a website to download lesson plans for other educators without charge. In addition, the study facilitated communication about osteoporosis between clients and their primary care provider.

Some questions may be raised about the sample size, the short length of the study, and the exclusion of excessive alcohol intake among the risk factors. The researchers recognized the limitation of their study in relation to time. Longer studies could include BDM after one year.

This was an interesting and valuable study with application to larger populations based on the predicted dramatic increase in osteoporosis in our rapidly escalating elder population.

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montgomery poster awards

On his retirement from the University of Georgia in 1984, Dr. James P. Montgomery, Director of the Gerontology Center and his wife, Geneva, contributed money to the Gerontology Center without restricting its use. Their gift has funded the awards, named in Dr. Montgomery's honor, through 2002.

Introduction: Dr. Frank Whittington

The student poster session is the heart of the Gerontology and Geriatrics Student Convention. It is where students have the opportunity to present their own work, to try out their presentation skills, and receive feedback from their peers and faculty from other universities. In introducing the poster session for the past three years, I have said that teaching and learning are inseparable, that learning occurs through teaching, and that learning demands teaching. Similarly, research, as a form of learning, demands that it be disseminated. I have always subscribed to the rule George Maddox taught me: "If you want to understand something, try to change it," and I would add, teach it.

During the poster session, students become teachers. For some it will be their first experience being the expert and trying to communicate their special knowledge to others. For some the poster session at this Student Convention may be the first step on the path to an academic career of teaching and research. In keynoting the 2001 convention, Ray Cowan asked students if they thought they wanted an academic life? Many student convention attendees no doubt do and are preparing for it. They should know that learning and teaching are among life's most meaning-filled and gratifying pursuits and that the academic life is a special gift, available only to a select few. The Student Convention poster session is where students can begin to recognize and value this truth.

FIRST PRIZE

Paulette Keller and Susan Boger, South Carolina State University
Myths, Misconceptions and Misunderstandings Concerning Diabetes Mellitus Among Aging African Americans

The beliefs of aging African Americans (AAAs) dictate the extent of their cooperation when preventing or managing diabetes. The purpose of

this study was to determining beliefs associated with myths, misconceptions and misunderstandings concerning Diabetes Mellitus (DM) among AAAs. Study participants were recruited from individuals attending wellness clinics and workshops within a 50-mile radius of Orangeburg, South Carolina. African Americans aged 55 years and older were interviewed individually using a 24-item, closed-ended questionnaire having “yes” or “no” responses. Four conditional questions were included in the 24 items if “yes” was the response. 36 participants completed the questionnaire, 58% being female. 90% completed high school and of those 69% had attended college. 36% reported that they were diabetic. Preliminary findings indicate that 75% respondents believe that diabetes and “sugar” are the same. 70% believed that eating too much sugar did not cause diabetes but 78% indicated they thought the food they eat could cause diabetes and that diet and weight are contributing factors. The majority of respondents are not ignorant of the truths about the disease. However, there is still a portion of AAAs needing to have falsehoods associated with DM dispelled. The knowledge generated from this study will help to remove educational barriers by addressing the beliefs of AAAs. This will assist healthcare providers in designing programs that target prevention and management of DM among AAAs.

SECOND PRIZE

Karen Daniels, Jeffrey P. Toth and Christopher Hertzog, Georgia Institute of Technology

Judgements of Learning and Aging: A Dual Process Approach

Judgments of Learning (JOLs) require individuals to assess the probability with which they will be able to remember target information at a later time. Although anecdotal evidence suggests that JOLs play an important role in learning and memory, prior research has tended to find relatively small correlations between immediate JOLs and later performance. In addition, research examining age differences in JOL/performance relations has produced conflicting results, with some studies reporting age-related declines in JOL accuracy, and others reporting age invariance. The present study explored the hypothesis that both the small correlations and the mixed aging results stem from a failure to separate memory performance into its conscious and unconscious components. More specifically, we examined the idea that while memory judgments can be based on either consciously accessible information or more unconsciously generated feeling of familiarity, immediate JOLs are based only on the former. To test this hypothesis, we asked participants to indicate the

subjective basis of their memory responses (*Recollect, Familiar or New*), in tests of recognition (Experiment 1) and cued-recall (Experiment 2), and examined JOL, accuracy as a function of these judgements. Consistent with the idea that immediate JOLs reflect only consciously accessible information, we found higher correlations between JOLs and *Recollect* judgments than between either JOLs and *Familiarity* judgments or JOLs and overall performance. The results suggest that separating memory performance into its component processes can provide insights into the nature of JOLs, as well as age-related changes that occur with this particular form of metacognitive monitoring.

THIRD PRIZE

Mary P. Shotwell, The University of George & Brenau University Older Adult Participation in Tai Chi: Perceived Benefits and Functional Gains

Kutner et al., (1997) interviewed and asked about the “ways in which they [older adults] benefited from participation in Tai Chi,” using a six question, binary response (yes/no) interview instrument. They found that older adults who participate in Tai Chi have lower rates of “fear of falling” and an increased ability to “to do all they can do,” with regard to daily living tasks. While this structured survey yielded valuable results it was thought that qualitative studies on older adult perceptions of Tai Chi might better articulate more specific functional gains that individuals experience as a result of participation. This case study consisted of participant observations over a 4-month period, interviews with the participants, and analysis of archival materials. Findings reveal that participation in Tai Chi is beneficial. Older adults report increased strength, balance, ability to breath better, and an improved ability to manage stress. Participants note that after participating in Tai Chi, they have an increased effectiveness in daily life tasks such as leisure, self-care, and work-related tasks. A notable finding from the participants is that group belonging and a supportive environment is critical to maintaining participation in the exercise group. Results from this study could help those designing Tai Chi programs for the elderly tap into motivation more effectively and promote benefit from participation in such an exercise programs.

