UMRA Workshop
Health benefits of companion animals for seniors: Pros and cons

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Director—CENSHARE
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Pam Schreiner—brief bio

• 27 years in the Division of Epidemiology and Community Health, School of Public Health
• Teach statistical methodology and SAS programming
• Principal Investigator of the Coronary Artery Risk Development in Young Adults (CARDIA) Study
• Research interests: primary prevention of cardiovascular disease in middle age, including obesity and dyslipidemia; currently focused on hyperglycemia and hearing loss
CENSHARE

- Center to Study Human-Animal Relationships and Environments
- Established in 1981 by RK Anderson
  - DVM with interest in veterinary public health
- 3 main goals
  - Education: to disseminate knowledge about human-animal relationships via educational programming
  - Research: to stimulate and promote scientific study of human-animal relationships and environments
  - Service: to serve as a community resource for all matters involving human-animal relationships, including data for those developing public policy
CENSHARE

• Director since 2013
  – Focus on companion animals and human health
  – Animals in our environment
  – Study design and analytic methods
  – Resource for investigators interested in researching/quantifying the human-animal bond
  – Future goals to study how we impact animals’ health and well-being
Topics Covered

• Definition of companion animals
• Pet ownership in the US
• Magnitude of pet effect
• Health benefits in seniors
  – Physical activity
  – Diet, lifestyle, self-care
  – Depression and loneliness
    • Biomarkers
  – Cardiovascular disease
• Pros and cons summary
• Reading the news objectively
Polls
Definition of Companion Animal (ASPCA)

• “Companion animals should be domesticated or domestic-bred animals whose physical, emotional, behavioral and social needs can be readily met as companions in the home, or in close daily relationship with humans”

• Species suitable to be companion animals
  – Dogs, cats, horses, rabbits, ferrets, birds, guinea pigs and other small mammals, small reptiles, fish
  – Domestic-bred farm animals if kept legally and responsibly
  – ASPCA is opposed to keeping wild animals or wild/domestic hybrids as pets
Companion Animals in the US (American Pet Products Association)

- Total US pet industry expenditures in 2020
  - $103.6 billion

<table>
<thead>
<tr>
<th>Category</th>
<th>Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pet food and treats</td>
<td>$44.1</td>
</tr>
<tr>
<td>Supplies, live animals &amp; OTC medicine</td>
<td>$23.4</td>
</tr>
<tr>
<td>Vet care &amp; product sales</td>
<td>$32.3</td>
</tr>
<tr>
<td>Other services*</td>
<td>$9.7</td>
</tr>
</tbody>
</table>

*boarding, grooming, insurance, training, pet sitting, walking and all services outside of veterinary care
US Pet Ownership

- 2019-2020: 67% of households or 84.9 million homes

<table>
<thead>
<tr>
<th>US households (millions)</th>
<th>APPA</th>
<th>AVMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird</td>
<td>5.7</td>
<td>3.5</td>
</tr>
<tr>
<td>Cat</td>
<td>42.7</td>
<td>31.9</td>
</tr>
<tr>
<td>Dog</td>
<td>63.4</td>
<td>48.3</td>
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<tr>
<td>Horse</td>
<td>1.6</td>
<td>0.89</td>
</tr>
<tr>
<td>Freshwater fish</td>
<td>11.5</td>
<td>10.5 (both)</td>
</tr>
<tr>
<td>Saltwater fish</td>
<td>1.6</td>
<td>--</td>
</tr>
<tr>
<td>Reptile</td>
<td>4.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Small animal</td>
<td>5.4</td>
<td>3.8</td>
</tr>
</tbody>
</table>
Demographic Trends

• Recent market analysis* examining demographic trends on consumer spending based on the size and age distribution of the future population
  – Overall US population will grow by 8% between 2015 and 2025
  – Those between 70 and 84 will increase by 50%
• Retired people spend more time within their homes on activities and hobbies
• Spending on pets likely to grow well above the rate of total consumption

Relative Risk vs. Absolute Risk

High relative risk, Low absolute numbers

Low relative risk, Large absolute numbers

Optimal
Relative Risk vs. Absolute Risk

- High relative risk, Low absolute numbers
- Low relative risk, Large absolute numbers
Physical Activity
Pets and Exercise

• In dog owners, walking associated with weight loss and lower BP
  – Estimates that 30-60% of dog owners don’t walk their dogs regularly
  – Reasons: weather, work, family responsibilities, dog behavior, laziness/fatigue

• Veterinary data suggest obesity epidemic in pets parallels humans
  – Association for Pet Obesity Prevention—56% of dogs and 59% of cats are overweight or obese
Pets and Exercise 2

• In community-dwelling adults 71-82 years from the Health, Aging and Body Composition Study*, only 36% walked their dogs at least 3x/week
  – Dog walkers were more likely to achieve 150 minutes of walking/week and had faster walking speeds (a measure of mobility) than non-dog owners
  – 3 years later, dog walkers were 2 times more likely to achieve recommended walking levels

• Increases in physical activity only in a subgroup who may have been motivated to improve fitness or already physically active

*JAGS 2006; 54: 1419-1424
Diet, Lifestyle, Self-Care
Diet, Lifestyle, Self-Care among Seniors

- More regular meals/higher diet quality (more milk and vegetables consumed)
- Better self-care
- Declines in prescription drug use
- Better sleep
- Fewer MD visits and minor health problems
Depression and Isolation
The role of pets

- Companionship
- Conversation topics/social lubricant
- Pet owners feel better about themselves because of unconditional love
- Safety
- Return to play and laughter
- Pleasurable to watch
- Comforting to touch
- Constancy and routine
The role of pets 2

• Are these benefits related to pets or increased contact with others?
• A sense of purpose
• Balanced with expense, potential for accidents and injuries due to tripping
• Some cities have foster programs to allow seniors to have pets without permanent adoption (seniors adopting senior pets)
• Pets not a panacea for aging, but a variable that may affect health and happiness
The role of pets 3

- In the Health and Retirement Study*
  - 52% reported having a pet (dog or cat, most with only 1 pet)
  - Pet owners were 1.89 times more likely to have experience depression
  - Temporality: were they depressed and adopted a pet, or does pet ownership lead to depression?
  - Does loss of a previous pet cause persistent depression?
  - Factors that differ between pet owners and nonowners?

*BMC Public Health 2018; 18: 305-11
The role of pets 4

• Companion animals in the home and mental health, including seniors
  – Increased motivation for behavioral changes
  – Reduced anxiety
  – Increased social connections and reduced loneliness
  – Reduced risk behaviors

• ”I can’t give up when I have them to care for”

*Anthrozoos 2021; 34(4): 543-562
Biological plausibility

• Oxytocin
  – “happiness hormone”, social bonding
  – Increases when women interact with bonded dog, decreases when men interact
  – Enhances sedation and relaxation, reduces fearfulness and sympathetic activity
  – Decreases blood pressure and heart rate

• Alpha amylase
  – Stress response, sympathetic nervous system, peaks 10 minutes after stress

• Cortisol
  – Chronic stress
Cardiovascular Disease
Companion Animals and Health

• In 2013, AHA issued a scientific statement on pet ownership and CVD risk
• Data for pet ownership equivocal for
  – Blood pressure, lipids, obesity, heart rate variability
  – Some evidence of increased survival in patients with established CVD
• Summary: “Pet ownership, particularly dog ownership, is probably associated with decreased CVD risk; pet ownership, particularly dog ownership, may have some causal role in reducing CVD risk”

*Levine et al., 2013. Circulation 127(23): 2353-63
AHA Conclusion

- Pet ownership “may be reasonable” for reduction in CVD risk (particularly dog ownership and physical activity)
- Pet adoption, rescue, or purchase should not be done for the primary purpose of reducing CVD risk
AHA Conclusion 2

• Mechanism
  – Physical activity: increased in dog owners, mostly through behavioral intention and motivation/social support
  – Obesity: Obese pet owners lose similar weight as non-owners with dietary counseling

• Benefits are through intermediate factors such as mood, depression, social support

• Other species may have benefits, but not often considered

• Methodological issues—small numbers, temporality, differences in who chooses pets, comorbidities
Heart Rate Variability

• Heart rate variability: marker of sympathetic and parasympathetic autonomic nervous activity

• In patients with lifestyle-related disease (diabetes, hypertension, hyperlipidemia)*:
  – Pet owners: greater heart rate variability compared to non-owners
  – Adjusted for differences in age, sex, BMI, smoking
  – Cross-sectional data, no information on walking, exercise

• In patients with healed heart attacks**:
  – Pet owners: higher HRV compared to non-owners:
  – HRV: lower in depressed patients

*Am J Cardiol 2012; 109:1164-1170; **Am J Cardiol 2003; 91:718-721
Post-MI Survival

• Pet ownership associated with improved long-term survival 1 year after a heart attack*

• Interaction of pet ownership with depression
  – 460 patients
  – Best outcome: pet owner/low depression
  – Moderate outcome: either pet owner/high depression or non-pet owner/low depression
  – No data on when pets obtained or lost, too few deaths to separate cat owners from dog owners

*Anthrozoos 2011; 24:273-285
Pets and recovery post-stroke*

PROS

• Motivation for physical and psychosocial recovery
• Someone to care for
• Acceptance of disability
• Family member

CONS

• Expense
• Fear of losing the ability to keep pets (either death of pet or unable to care for current pet)
• Grief and mourning

*Br J Community Nurs 2014; 19(12):578-84
Data from the CARDIA study
Results

- 840 participants completed questionnaire
  - 181 (21.6 %) current dog owners
  - 172 (20.5 %) current cat owners
  - 104 (12.4 %) current owners of both
  - 287 (34.2 %) past owners of either
  - 95 (11.3 %) never owners
## Reasons for Not Currently Owning Pets (past and never owners)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Choice</td>
<td>60.5%</td>
</tr>
<tr>
<td>Allergies</td>
<td>14.4%</td>
</tr>
<tr>
<td>Allergies in family member</td>
<td>9.6%</td>
</tr>
<tr>
<td>Housing situation</td>
<td>15.5%</td>
</tr>
<tr>
<td>Can’t afford</td>
<td>9.6%</td>
</tr>
<tr>
<td>Other</td>
<td>16.7%</td>
</tr>
</tbody>
</table>
Dr Tinycat to the OR

STAT!
Pros and Cons of Pet Ownership

• Pros
  – Companionship
  – Less isolation and depression
  – Improved self-care and exercise
  – Structured lifestyle

• Cons
  – Allergies
  – Grief over pet loss
  – Inability to afford or care for pet
  – Fear that death will leave pet alone
Reading the News Objectively

• Are the data cross-sectional?
  – Diabetes and obesity examples

• Are the benefits related to increased activity or social contact rather than the pet?

• Who is the comparison group?
  – Are those with companion animals either better off socioeconomically or health-wise? A safer neighborhood or homeowners with more leisure time?

• Is wanting a pet a marker of a different type of person than someone who does not choose one?

• Are the populations generalizable with good sample size?
QUESTIONS?