



INTRODUCTION TO RESEARCH

MEHARRY MEDICAL COLLEGE

MEHARRY COMMUNITY ENGAGEMENT CORE

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Vision

To eradicate health and healthcare disparities through long-term, collaborative, mutually beneficial community/academic research partnerships

Mission

To combine the passion, knowledge, and skills of community partners and academic researchers to carry out research, share results, and put into practice research findings that advance health equity

OBJECTIVES

- Define health research and discuss its benefits
- Define health disparities and role/benefits of health research in eliminating them
- Define and discuss basic and applied research
- Provide examples of basic and applied health disparities research
- Summarize steps in the research process
- Summarize ethical and safe research guidelines/practices

RESEARCH & RESEARCH BENEFITS





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WHAT COMES TO MIND
WHEN YOU HEAR THE
WORD "RESEARCH"?

WHAT HAS BEEN YOUR
EXPERIENCE WITH
RESEARCH?

WHAT IS RESEARCH?

“Research is formalized curiosity. It is poking and prying with a purpose.”

-Zora Neale Hurston Novelist, Anthropologist

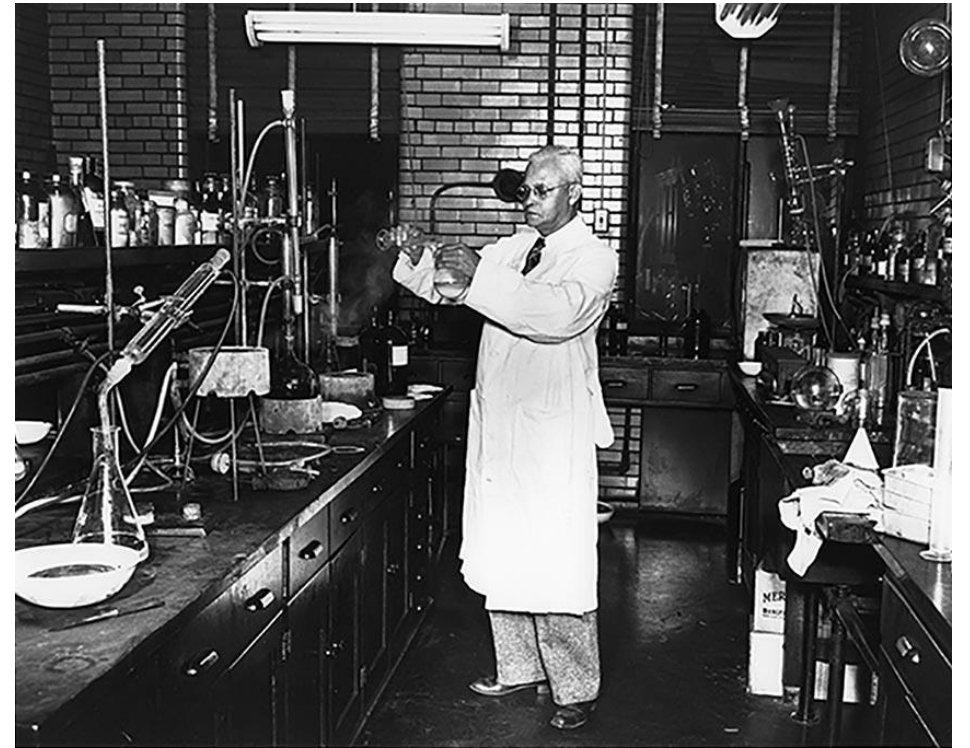


Photo: Illinois Distributed Museum

St. Elmo Brady in a laboratory at Fisk University

WHAT IS RESEARCH?

Knowledge or information gained

- through reasoning
- through intuition
- through a guided activity(ies)

Research is the process of finding out things we don't already know. It's a way to find answers to questions.

WHAT IS HEALTH RESEARCH?

Health research is scientific investigation that allows us to learn more about human health, discover better ways to prevent and treat disease, and improve patient care and treatment.



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WHAT ARE SOME
BENEFITS OF HEALTH
RESEARCH?

BENEFITS OF HEALTH RESEARCH: OVERVIEW

- Knowledge obtained from health research is turned into clinical, medical, and everyday practices
 - Screening & Diagnostic Test: Ultrasound; X-Rays; TB Skin Test
 - Medicines: Tylenol; Benadryl
 - Public Policies: Seatbelts required while driving; No smoking in restaurants;

BENEFITS OF HEALTH RESEARCH IN ADDRESSING HEALTH DISPARITIES



Health disparity is a health difference that is closely linked with disadvantage.



Health disparities affect groups of people who have experienced greater obstacles to health based on discrimination or exclusion

HEALTH DISPARITIES

- Breast Cancer
- Prostate Cancer
- HIV/AIDS
- Diabetes
- Women's Health
- Cardiovascular Disease
- Mental Health

EXAMPLES OF HOW HEALTH RESEARCH IS BENEFICIAL IN ADDRESSING HEALTH DISPARITIES AT MEHARRY



Photo: Sisters Network

African American Women and Breast Cancer

Disparity: Breast cancer death rates are higher in African American women compared to women of other races.

Related Health Disparities Research:
Compare genes of African American women with and without breast cancer to identify prevention/therapy targets



African Americans and Heart Disease

Disparity: Heart disease burden is higher among African Americans compared to other races.

Related Health Disparities Research:
Using cutting edge science and approaches to remove mechanisms causing cardiovascular diseases

RESEARCH TYPES



TWO MAJOR TYPES OF HEALTH RESEARCH: BASIC

- Basic Research
 - Designed to expand knowledge, not necessarily to create or invent
 - Also known as bench science
 - Includes research on cells, molecules, and the mechanisms of human disease through animal studies
 - **Example:** Dr. Smith is a bench scientist that conducts genetic testing for inherited breast cancer risk in African Americans

TWO MAJOR TYPES OF HEALTH RESEARCH: APPLIED

- Applied Research
 - Designed to solve practical problems
 - May include research on effectiveness, managing, preventing issues in the human experience
 - **Example:** Dr. Johns is a social scientist whose research is on what African American women know and want to know about genetic testing for breast cancer

BASIC AND APPLIED HEALTH DISPARITIES RESEARCH AT MEHARRY



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Photo: www.mmc.edu

BASIC HEALTH DISPARITIES RESEARCH AT MEHARRY



Photo: Meharry Medical College Library, Archives

Harold D. West, PhD

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- First African American president of Meharry, 1952-1956
- First scientist to synthesize threonine, an amino acid
 - If changed or mutated on the gene, there is an increased risk of developing some cancers, including breast cancer.
- Today, his work is helpful in identifying racial differences in cancer risk based on mutations.

APPLIED HEALTH DISPARITIES RESEARCH AT MEHARRY

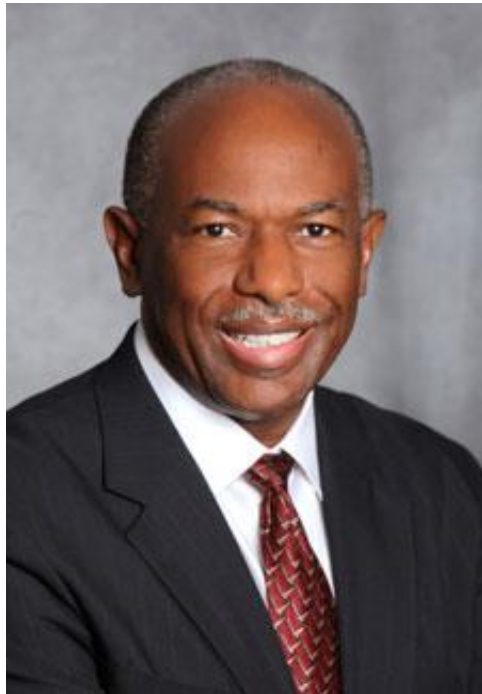


Photo: www.mmc.edu

James E.K. Hildreth, PhD, MD

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- Current president of Meharry
- World renown HIV/AIDS researcher
- Used findings from his basic research to develop a microbicide, a vaginal cream, to help stop HIV infection
- Recently, conducted study on cultural acceptability of vaginal microbicide in African and African American women

RESEARCH ETHICS AND HUMAN PROTECTIONS



THE LEGACY OF HENRIETTA LACKS



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Photo: National Academy of Sciences

- An African American woman whose cancer cells are the source of HeLa cells
- During a tumor biopsy for cervical cancer treatment at Johns Hopkins Hospital in Baltimore, Maryland, her cells were taken and cultured by a physician.
- HeLa cells are the first immortalized cell line and among the most important in medical research
- No consent was obtained to culture her cells, and she nor her family were compensated for their extraction or use

Historical Example of Unethical Research Practices and Human Research Protections Violations

TUSKEGEE SYPHILIS STUDY



Photo: National Archives

- From 1932-1972, the US Public Health Service conducted a study to observe the course of untreated syphilis.
- Researchers told participants they were being treated for “bad blood”, a local term used to describe illness
- This study involving African American men withheld treatment that could cure the disease
- The men did receive medical exams, free meals, and burial insurance
- The study was projected to go on for 6 months, but lasted forty years

CURRENT HUMAN SUBJECTS PROTECTIONS



Photo: The Philadelphia Inquirer

Former Inmates of Holmesburg Prison Protesting

- There are regulators and regulations in place to prevent unethical research practices
- Unethical practices include:
 - Lack of informed consent
 - Coercion or pressure to participate
 - Exploitation of a vulnerable population
 - Withholding information or withholding treatment

ENSURING RESEARCH ETHICS

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- IRB (Institutional Review Board) Approval
 - A group of community members and researchers charged with reviewing and monitoring human subjects research
 - Every research institution must have one
 - Ensures participants are treated with respect
- Informed Consent
 - A voluntary agreement to participate in research
 - Participants are clearly told about the purpose, procedures, risks and benefits of research
 - Informs a participant about the research and its potential risk
 - Signed by the participant or legal guardian

PRINCIPLES OF ETHICAL RESEARCH



Respect

Voluntary consent

Protect vulnerable populations and people who cannot make decisions (i.e., children, persons with disabilities, elderly, and prisoners)



Beneficence

The benefits must outweigh potential harms



Justice

Burdens and benefits of research must be distributed fairly

RESEARCH STEPS



RESEARCH STEPS

- Develop a research question
- Identify a hypothesis related to the question*
- Design a research study to answer the hypothesis
- Collect & analyze data
- Determine results and draw conclusions
- Share research findings

**For some questions, a hypothesis may not apply.*

OUR RESEARCH QUESTION



- How has the College Hill Neighborhood Association addressed local food insecurity?

RESEARCH STARTS WITH A QUESTION

- Questions can come from:
 - Past research
 - What are the barriers preventing some local residents from accessing fresh food?
 - Experience
 - How do I, a College Hill resident, and public transportation user, buy groceries if the city's transportation system is not reliable and there are no grocers within 10 miles?
 - Informal Observation
 - Where do people in College Hill buy their groceries?

DEVELOPING RESEARCH QUESTION

Choose a topic

- Food insecurity in College Hill

Review Literature

- Starting point to gather information
- Introduction to major works, key issues, and experts

DEVELOPING A RESEARCH QUESTION

- Explore potential questions
 - Ask open-ended “How” & “Why” questions
 - Why does this topic matter? To you? To others?
- Determine and evaluate the research question(s)
 - Is your question clear? Focused?

IDENTIFY A HYPOTHESIS



■ Hypothesis:

- Influenced by the research question
- Prediction or educated guess about the outcome of the research
- The research may prove or disprove the hypothesis
- **Not all questions will have an associated hypothesis**

OUR HYPOTHESIS

- Our question: How has the College Hill Neighborhood Association addressed local food insecurity?
- Hypothesis: None, because we cannot predict the “how” of the Association work to address local food insecurity

OR

- Alternate question: Is there a relationship between the work of the College Hill Neighborhood Association and the recent decline in food insecurity?
- Alternate hypothesis: The College Hill Neighborhood Association plays an integral role in the local fight against food insecurity.

DESIGN A RESEARCH STUDY



What is your research question?

How has the College Hill Neighborhood Association addressed local food insecurity?



What type of study are you undertaking?

Exploratory – trying to get a grasp of a phenomenon

Descriptive – a descriptive study that provides a profile of a topic

Explanatory – an examination of the relationship between two variables



What target population will you base your data on?

College Hill Residents

DESIGN A RESEARCH STUDY

- What research methods will you use and why?
 - **Quantitative**
 - Uses numbers
 - Deductive
 - Researcher is typically an impartial observer
 - Requires hypothesis
 - **Qualitative**
 - Uses words
 - Inductive
 - Requires more participation and involvement on the part of the researcher
 - It does **NOT** require a hypothesis

RESEARCH STUDY DESIGN EXAMPLE

Considering our research question below, what should our design be?
Quantitative or Qualitative?

Research Question: How has the College Hill Neighborhood Association addressed local food insecurity?

RESEARCH STUDY DESIGN EXAMPLE

QUALITATIVE!!!

COLLECT & ANALYZE QUALITATIVE DATA

- Collect data that relates to the question or problem
 - **Focus Groups** – a small number, 5-10, of participants from the target population
 - **Individual Interviews** – an individual from the target population
 - **Surveys** – open-ended questions that yield conversational responses
- Analyze and interpret that data to determine its meaning
 - Read and re-read focus group and individual interview transcripts
 - Categorize data and create the framework
 - Identify patterns and make connections
 - Interpret data and explain findings

DATA COLLECTION AND ANALYSIS EXAMPLE



Over the next three months, focus groups will be held in conjunction with College Hill Neighborhood Association Meetings



Individual interviews will be conducted with Association Leadership

DETERMINE RESULTS & DRAW CONCLUSIONS

■ Determine Results

- Summarize the data
- Display data

■ Conclusions

- Summarize the experiment results; Support whether the hypothesis is proven true or false
- If True, summarize how this occurred by discussing the relationship between
- If False, explain why things did not go as expected; use unexpected results to create new hypothesis and discuss if additional experimentation needed and describe what should happen next

RESULTS AND CONCLUSIONS EXAMPLE

The data tells us that how the Neighborhood association has addressed local food insecurity:

- Raising money to purchase a pickup truck and 15 passenger van for the mobile grocery store and providing weekly food grocery trips for neighbors
- Turning 5 parcels of land into farmland

SHARING RESEARCH FINDINGS

- Purpose
 - Acknowledge research contributors, including participants
 - Share knowledge that can solve real world issues
 - Advance science
- Dissemination audiences (Beyond scientific readers)
 - Study participants
 - Community members/Community organizations
 - City and local government employees and officials

SHARING RESEARCH FINDINGS EXAMPLE

The findings from the focus groups will be shared with the following groups:

- College Hill residents
- Local city officials
- *Other groups?*

SUMMARY

- Defined health research and discussed its benefits
- Defined health disparities and role/benefits of health research in eliminating them
- Defined and discussed basic and applied research
- Provided examples of basic and applied health disparities research
- Summarized ethical and safe research guidelines/practices
- Summarized steps in the research process



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NOW...

WHAT COMES TO MIND
WHEN YOU HEAR THE
WORD "RESEARCH"?

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