

Background

- 84% of new cervical cancer cases worldwide occur in low-and-middle-income countries¹
- Three-visit cancer care paradigm** (screening, diagnosis, and treatment) is ineffective in low-resource settings, with high loss-to-follow-up rates at each stage
- Colposcope:** device used to screen for abnormal cells on a cervix
 - Pocket Colposcope (Fig. 1):** low-cost, accessible, and FDA cleared device that rivals state-of-the-art colposcopes



Fig. 1 Pocket Colposcope

Bass Connections Research

- Bass Connections** aims to investigate how to reduce the 3-visit cervical cancer care paradigm to a 2-step community care setting, with a focus on implementing the Pocket Colposcope
- 2016-17:** Global Value Chain analysis of the Pocket Colposcope introduction in Peru²
 - Identified key leverage points
- 2017-18:** Assess patient & physician attitudes toward Pocket Colposcope in Peru
 - Conducted patient surveys (Fig. 2), focus group with midwives, & training sessions with physicians

Patient barriers to cervical cancer screening in a study conducted in Peru (n = 29):

- 39% related to money
- 30.5% related to fear
- 15% related to lack of awareness
- 15% related to access to care

- 2018-19:** Conduct analysis of the clinical acceptability, policy implications, & cost-effectiveness of bringing the device to community health providers
 - Conducted focus groups with medical & legal experts, market analysis, interviewed stakeholders in Washington, DC, & developed survey tools



HOPE Model: The HOPE Program, our community partner, is a peer-education organization which trains and partners with local community health workers (CHWs) to deliver molecular HPV self-testing kits as part of a microfinancing and reproductive health promotion initiative.

Implications of COVID-19: Due to the COVID-19 pandemic we had to adjust our research objectives including a transition to literature reviews instead of data collection at clinics for the costing and policy teams

Research Objectives

2019-20 GOAL: Leverage the costing, policy and acceptability tools developed by previous teams to assess the feasibility of introducing the Pocket Colposcope as triage for HPV positive women in two different regions in Peru.

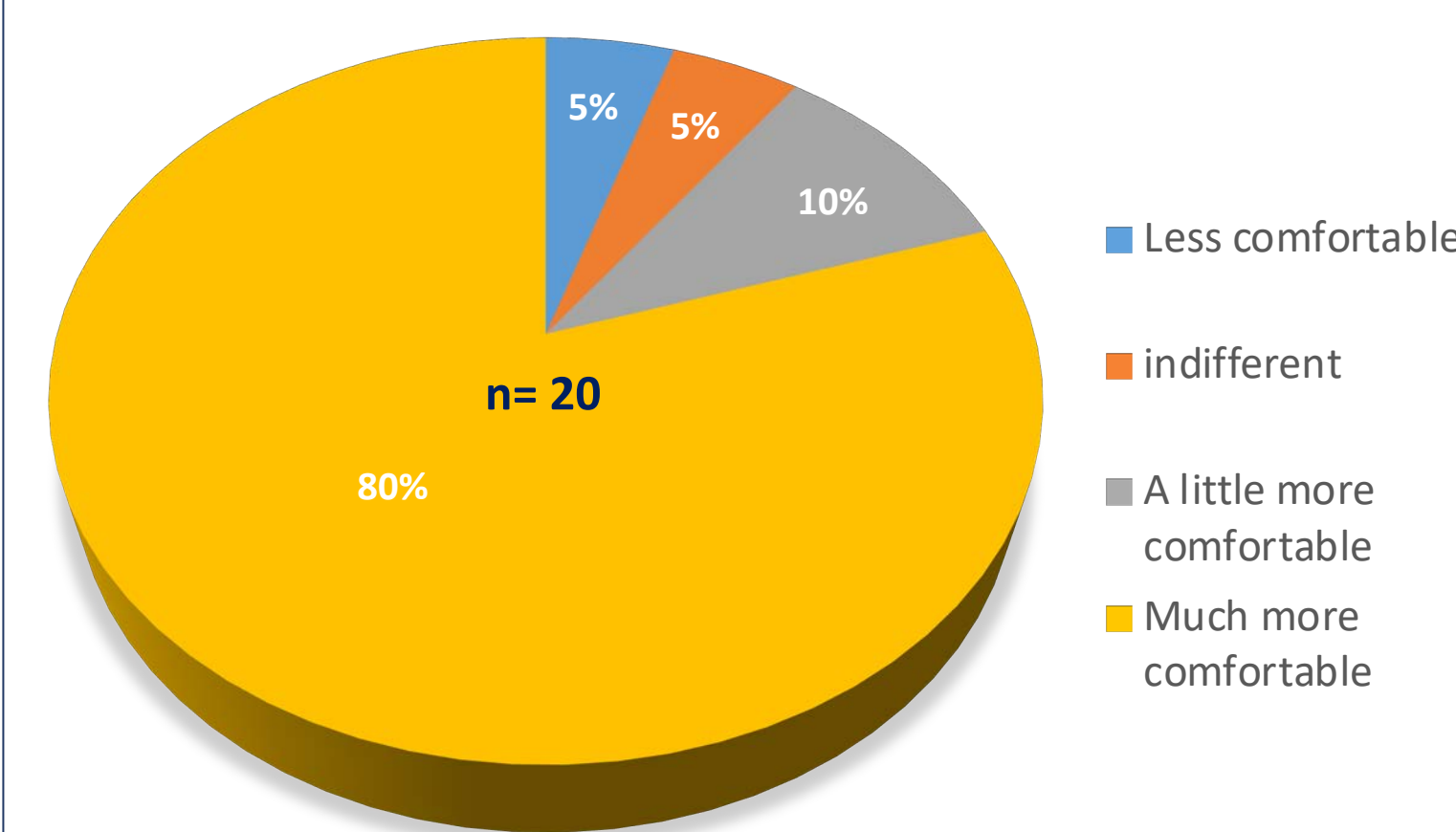
- Clinical Acceptability:** Investigate the HOPE HPV and Cervical Cancer Prevention Peer Education Model in Peru in order to implement the Pocket Colposcope in an effective test, screen, and treat triage model.
- Cost Effectiveness:** Conduct a literature review on cervical cancer (CC) screening, HPV vaccination, and CC epidemiology to inform a cost-effectiveness analysis of the Pocket Colposcope in Peru.
- Policy Framework:** Conduct a literature review on the policy landscape in Peru to identify policy barriers and enabling factors to implement a see-and-treat CC care paradigm.

HOPE Peer-Education Model Analysis

The objective of this study was to understand the logistics, efficacy and empowerment impact of an HPV and cervical cancer prevention peer-education model in Ventanilla, Peru. The knowledge gained from this study will help GWHT's goals of providing a model that **tests, screens, and treats** with the help of the Pocket Colposcope and an effective peer-education model.

Over Spring Break, our team interviewed and surveyed 20 community health workers (CHWs) from the HOPE Program in Ventanilla, Peru. Instruments included surveys based on **relational empowerment** and **financial autonomy** of CHWs in the HOPE Program. In addition, we measured **current barriers to screening** to gain insight about the specific environment of Ventanilla, Peru.

In comparison with a provider-based exam, are women more comfortable with self-HPV tests?

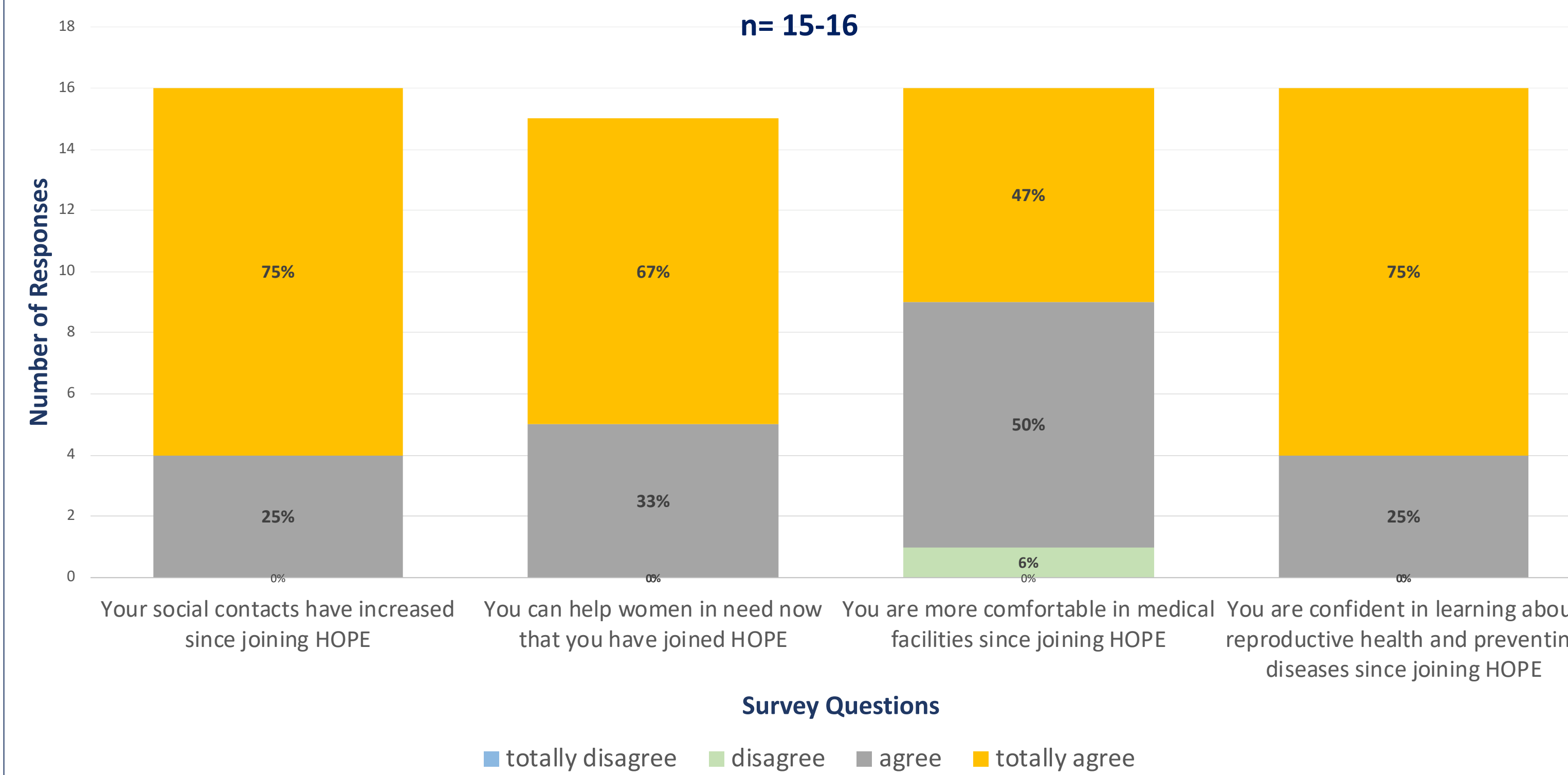


Community Screening Barriers n=18-20

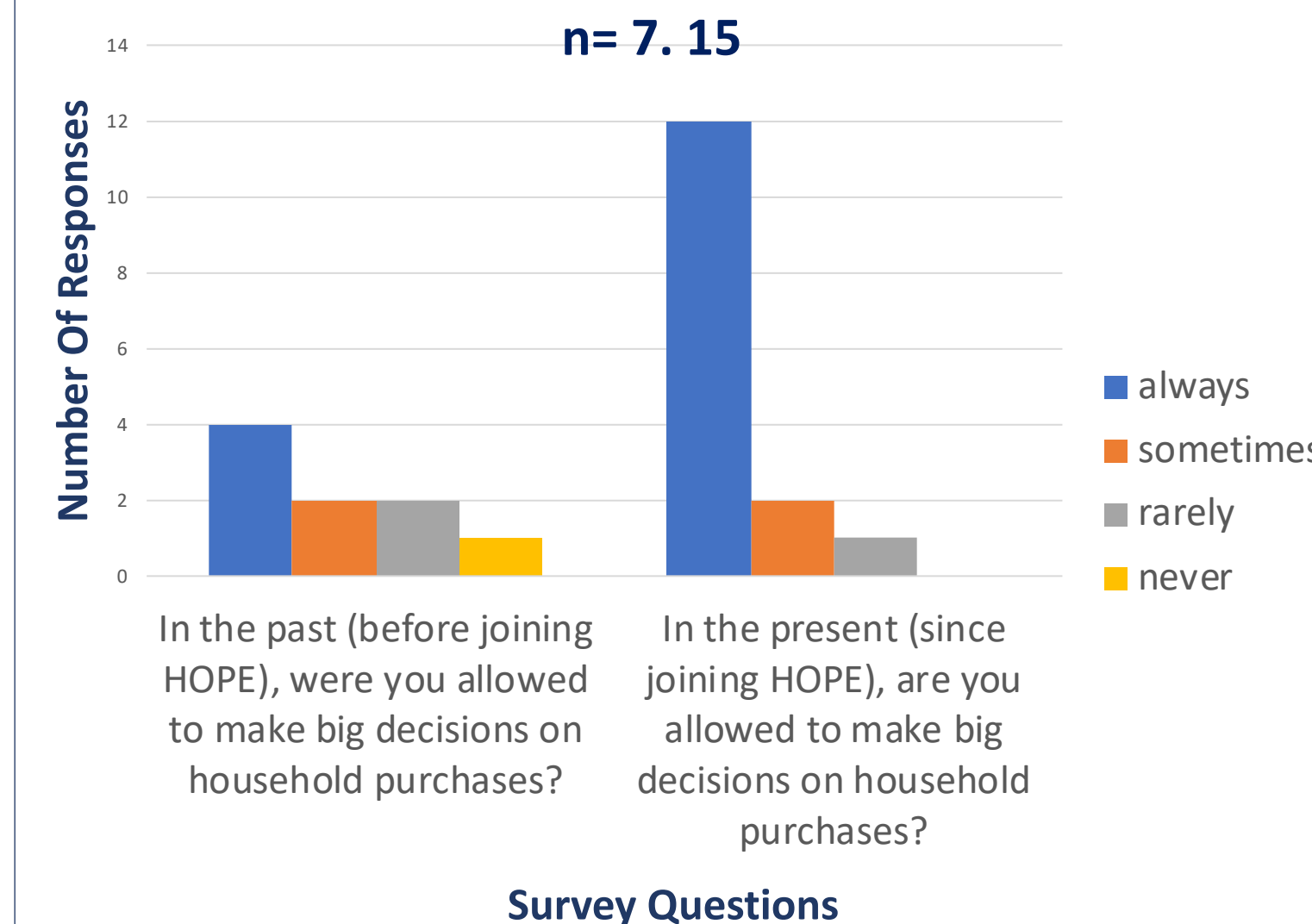
- | Cultural | Logistical |
|---------------------------|---|
| 1. Spousal approval (25%) | 1. Cost (62%) |
| 2. Fear of stigma (21%) | 2. Transportation time (60%) |
| 3. Religion (5%) | 3. Time for entire process (booking, testing, screening, and treatment) (58%) |
| | 4. Fear of Pain (55%) |

- Barriers were classified as either: *not a barrier, small barrier, medium barrier, or big barrier.*
- Percentages listed here are based on the number of responses that were classified as "big barriers."

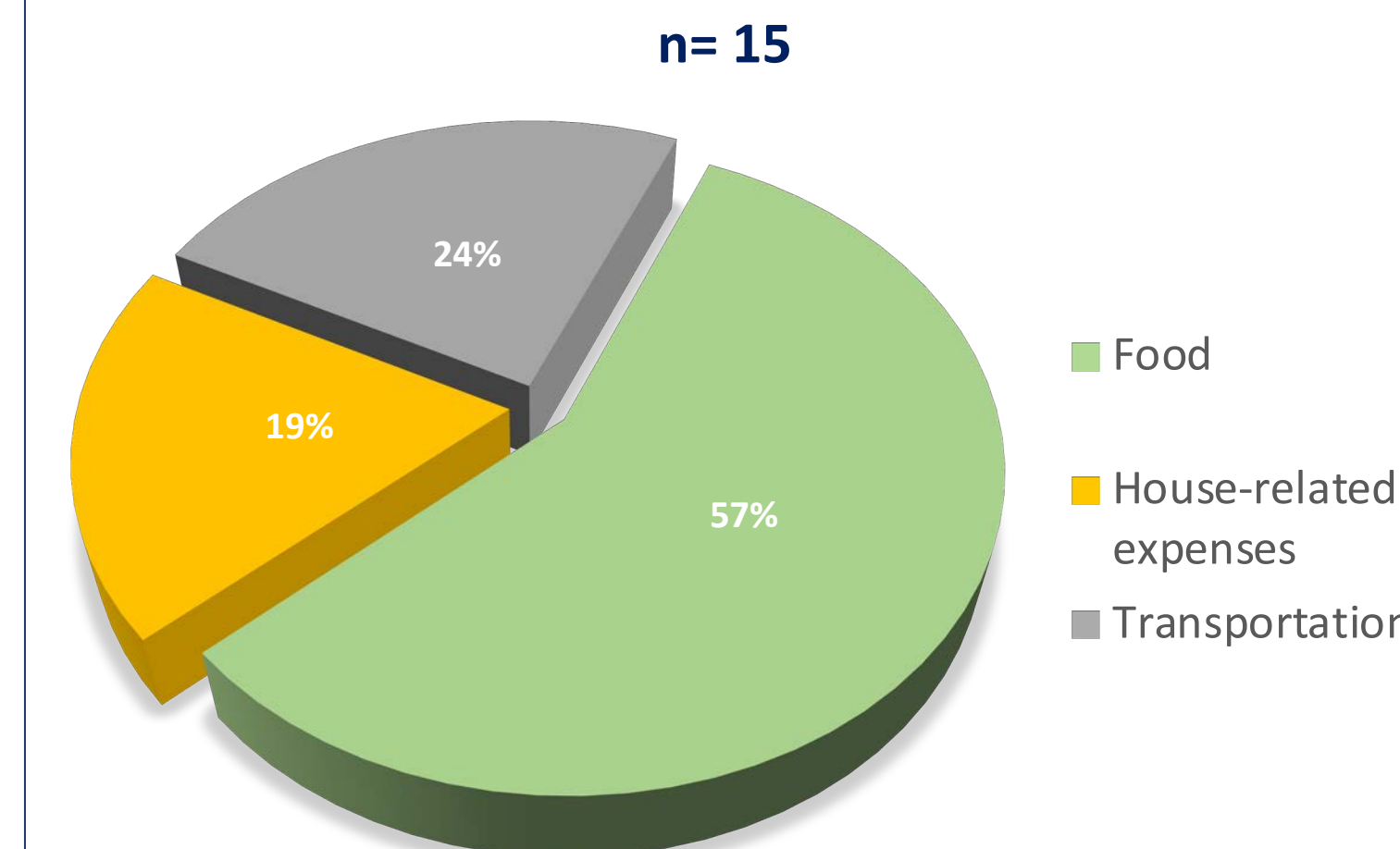
RELATIONAL EMPOWERMENT IMPACT ON HOPE LADIES n=15-16



FINANCIAL AUTONOMY AND THE HOPE MODEL n=7, 15



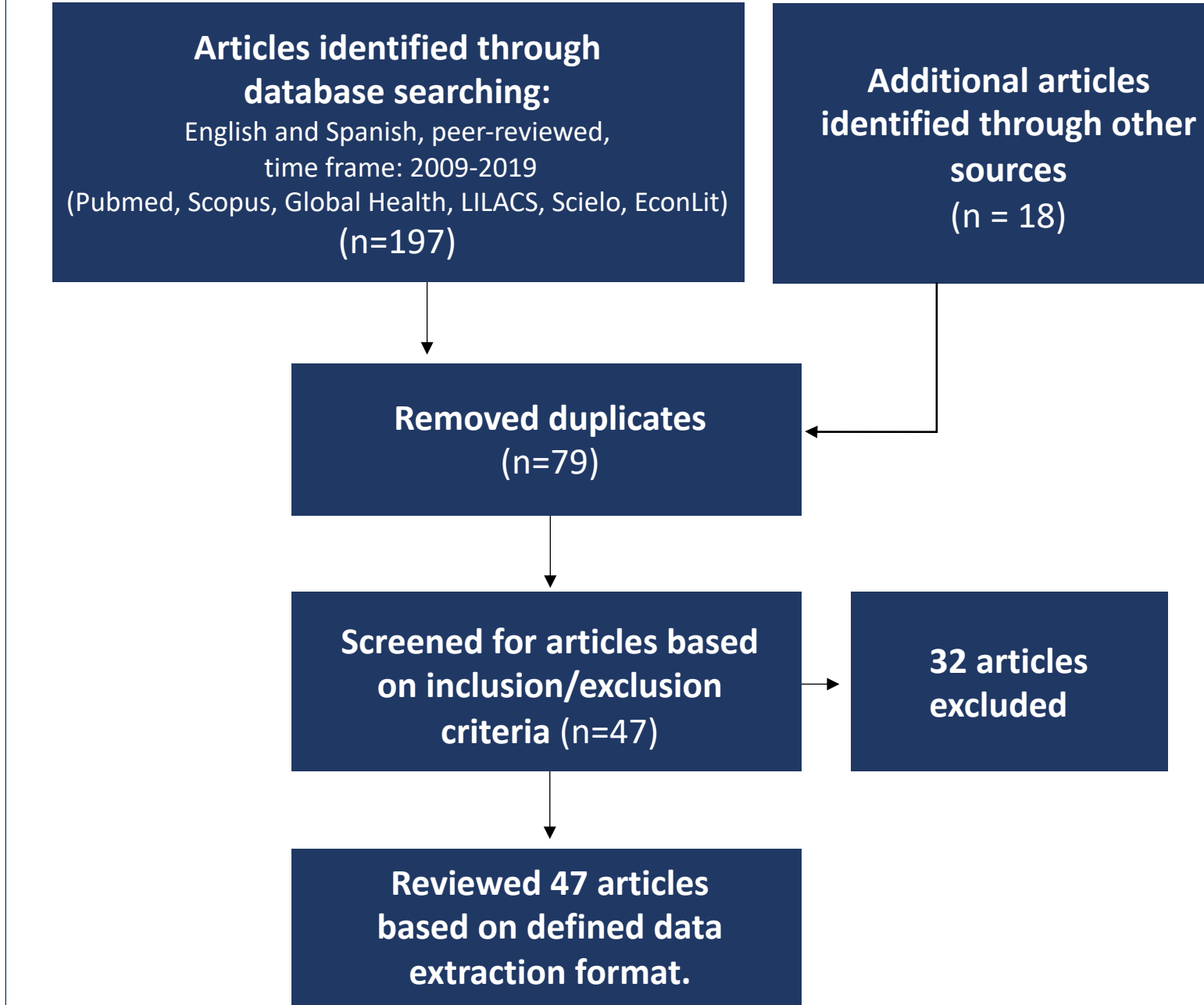
TOP 3 EXPENDITURES FOR HOPE EARNINGS n=15



Literature Reviews

1. Cost-effectiveness

Methods:



Results:

- In general, HPV vaccination has been shown to be cost-effective, but there are challenges to scale-up in LMICs. Goldie et al. (2005) showed that for CC screening options in Peru, 1-visit VIA and HPV testing were the most cost-effective.
- Although studies for other Latin American countries have shown that HPV followed by cryotherapy (for HPV+) is cost-effective, there is a shortage of CEA studies on see-and-treat models for Peru.
- Our cost-effectiveness analysis will address gaps in research on community health worker (CHW)-based and see-and-treat interventions for cervical cancer in Peru.

2. Policy

Barriers To Screen and Test Women	Results/Suggested Proposal	How our Model Responds to the Proposal	Will Strengthen Primary Care
Financial, Medical, Educational	Testing efficiency and cost-effectiveness depends on environment	Our model is best intended for low-resource regions	Yes
Financial, Medical	Tech-innovations are useful	Our model incorporates tele-medicine	Yes
Financial, Medical	There is a gap between testing and health insurance	Our model narrows the inequality gap in testing in low-resource regions	Yes
Financial	Implement testing model assuming payment	Our model provides screening at a lower cost	Yes
Financial	An incentive program will encourage women to return for results	Our model provides financial incentives through the HOPE program	Yes
Educational	Provide effective health education	HOPE ladies provide health education	Yes

Results:

- The see-and-treat model would strengthen primary care in Peru and combat the health, educational, and financial barriers that persist. There are many enabling factors to successfully implement the see-and-treat model in Peru that encompass the recommendations of research articles (n=30), ultimately leading to greater accessibility to care and narrowing inequalities in these sectors (Almonte, Huaynate, Barrionuevo-Rosas, Bolanos-Diaz, Ferris, Bayer, et al).
- A point should be made to emphasize the critical component proper screening education plays in the model's success, as well as the role of the HOPE ladies in establishing the importance of cervical cancer education and in combating cultural barriers of stigma.

Future Directions

Acceptability

- Conduct a parallel survey in Cajamarca, Peru to understand how to implement a compliment test, screen, and treatment model with the Pocket Colposcope and a peer-education model in a different cultural environment

Cost Effectiveness

- Analyze the cost-effectiveness of community health worker (CHW) HPV testing followed by a see-and-treat paradigm with the Pocket Colposcope and thermo coagulator in Peru
- Construct a paper on the economic evaluation of the Pocket Colposcope in Peru outlining the protocol for the design and scope for cost effectiveness analysis

Policy Framework

- Assess barriers to care in Peru and analyze the current policy framework and its efficacy regarding the navigation of these barriers
- Use these resources and this insight to create an updated policy framework for the widespread distribution and effective, equitable, and affordable usage of the Pocket Colposcope and the community-based see-and-treat model

References:

- Human Papillomavirus (HPV) and Cervical Cancer. 24 Jan. 2019, [https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-\(hpv\)-and-cervical-cancer](https://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer).
- Hamrick, Danny, et al. *A Global Value Chain Analysis of the PocketColposcope Introduction in Peru*. Duke Center for Global Women's Health Technologies, Nov. 2017.