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Perceptions of Global Health Imaging Among American Private Practice Radiologists

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Introduction

Medical imaging studies are an integral part of modern healthcare. Healthcare in developing countries is no exception as imaging is a key element in the diagnosis of many diseases or conditions targeted in the 2016 United Nations Sustainable Development Goals. However, the World Health Organization (WHO) reports 2/3 of the world's population lacks basic access to imaging resources. Despite its importance, radiology has lagged behind other medical specialties in participation in global health programs. Barriers to imaging services in global health programs include lack of funding and equipment, poor sustainability, time constraints, unreliable energy sources, poor roads and public transportation, and lack of trained radiology personnel.

Problem Statement

The purpose of this project was to measure the perceptions of American private practice radiologists regarding the imaging needs of the developing world, their role in meeting those needs, and the barriers to private practice radiologists participating in global health imaging programs.

Methodology

An electronic survey (Appendix 1) was created using Qualtrics and a link was distributed to a private practice radiology group via email. Permission was obtained to adapt a previously published survey of Canadian radiology residents regarding global health imaging (Zener et al. CARJ 2017). The adapted survey was reviewed by three fourth year medical students, one practicing radiologist, and one non-medical professional for content, clarity, and flow. The survey was voluntary and anonymous. Permission to distribute the survey was obtained from the radiology practice director. The study was considered Quality Improvement and no IRB approval was obtained.

Results

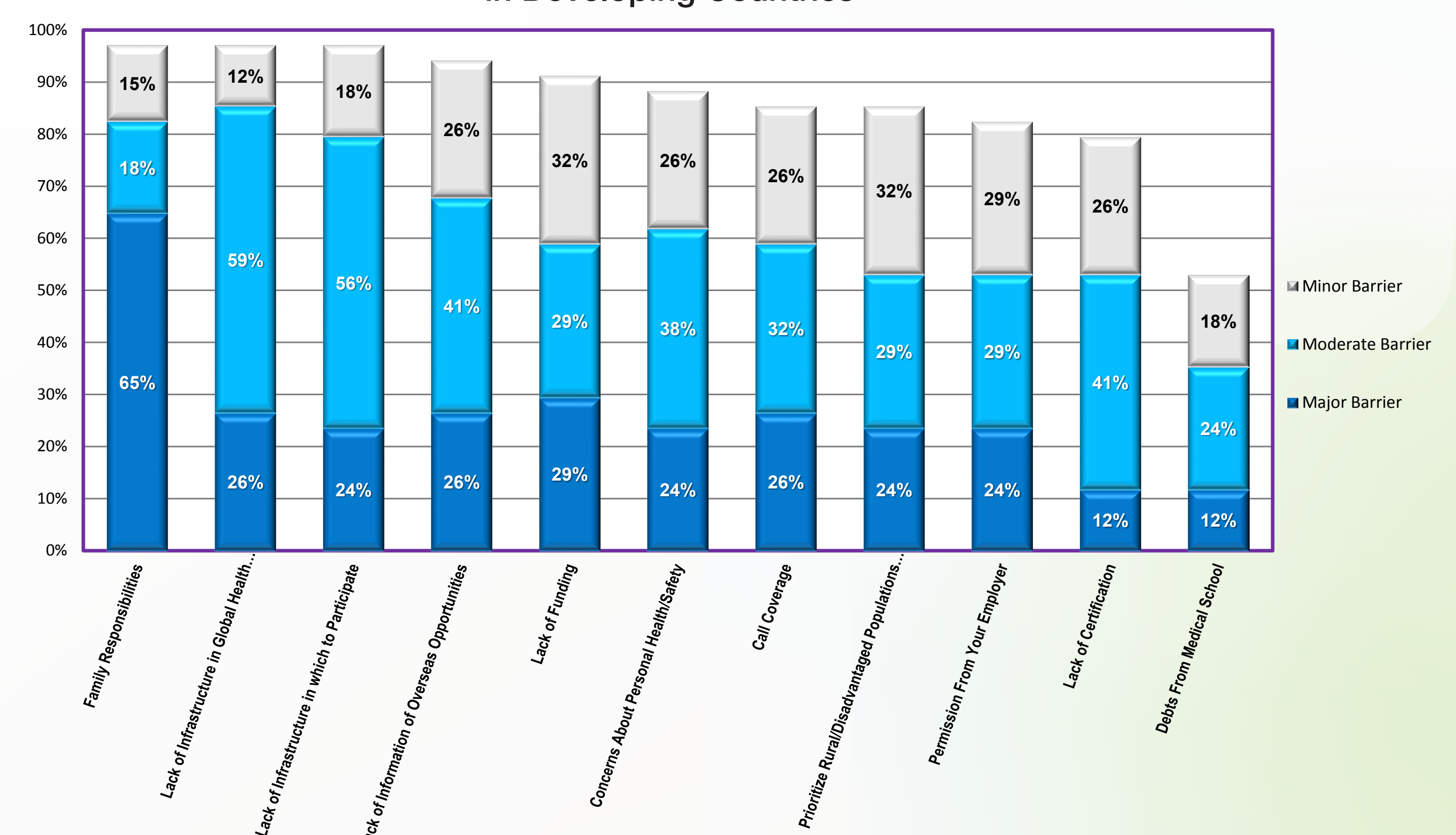
Survey demographics are given in Table 1. Thirty four of 76 radiologists responded to the survey (45% response rate). Four radiologists (12%) had prior international work experience. One (3%) had worked in a medical imaging capacity in a developing country. Sixteen radiologists (47%) were interested in pursuing international work related to medical imaging in the future and nineteen (56%) expressed interest in international teleradiology. Twenty eight radiologists (82%) perceived an unmet need for medical imaging in the developing world. Donating used equipment (85%) and welcoming foreign residents/radiologists for observerships/rotations (85%) were the most common responses to the role of American radiologists in meeting global imaging needs. Figure 1 summarizes the thoughts of American private practice radiologists regarding potential barriers to participating in a medical imaging capacity in a developing country.

Appendix 1: Survey Instrument

- Have you done any work of volunteerism in the developing world?
a. Yes b. No
- What was the nature of your international work/volunteerism? (Select all that apply)
a. Radiology b. Surgery c. Medicine d. Primary Care (family medicine/pediatrics)
e. Emergency Medicine f. Public health g. Religious or missionary work h. Research i. Other
- Please select the response that best describes your level of agreement with the following statement: "I plan on performing international medical aid work related to medical imaging in the future?"
strongly disagree disagree unsure agree strongly agree
- If you pursue international work in medical imaging in the future, what would you be interested in doing? (Select all that apply)
a. Helping with technical planning
b. On-site collaboration in education and training of local staff in new modalities or interventional techniques
c. On-site collaboration in education and training of local residents
d. Performing teleradiology
e. Unsure
f. I do not plan to pursue international medical work in medical imaging
g. Other (please specify)
- Please select the response that best describes your level of agreement with the following statement: "Increased medical imaging capacity is necessary for reducing poverty in developing countries."
strongly disagree disagree unsure/neutral agree strongly agree
- Do you perceive an unmet need for medical imaging in the developing world?
a. Yes b. No c. Unsure
- In your opinion, what is the role of American radiologists in meeting the imaging needs in developing countries? (Select all that apply)
a. Helping with technical planning
b. On-site collaboration in education and training of local staff in new modalities or interventional techniques
c. On-site collaboration in education and training of local residents
d. On-site research projects (e.g. imaging needs assessment)
e. Performing teleradiology
f. Donating used equipment
g. Donating money to global health programs
h. Advocating for policies that discourage immigration of radiologists from developing countries ("brain drain")
i. Welcoming radiologists trained or training in developing countries for an observership or rotation
j. Partnering with hospitals in developing countries to conduct educational conferences via live or recorded video
k. There is no role for American radiologists in developing countries
l. Other (please specify)
- The following factors are potential barriers to participating in a medical imaging capacity in a developing country. Please select the descriptor for each potential barrier that best represents your thoughts. (Descriptors: *Not a Barrier*, *Minor Barrier*, *Moderate Barrier*, *Major Barrier*)
a. Call coverage
b. Family responsibilities
c. Lack of funding
d. Lack of information of overseas opportunities
e. Lack of infrastructure in which to participate
f. Lack of established infrastructure in global health as it pertains to radiology
g. Lack of certification
h. Permission from your employer
i. Concerns about personal health/safety
j. Debts from medical school
k. Medical imaging needs of rural/disadvantaged populations in the USA should be addressed first
l. Other (Please specify)
- How long have you been practicing as a radiologist (excluding residency)?
a. 1-5 years b. 6-10 years c. 11-15 years d. 16-20 years e. 21-25 years f. 25+ years
- Are you currently serving, or have you in the past served in a supervisory position of other radiologists (e.g. department or section director)?
a. Yes b. No
- To which gender identity do you most identify?
a. Male b. Female c. Transgender Female d. Transgender Male e. Gender variant/Non-conforming f. Not Listed g. Prefer not to answer

Table 1. Demographics of Survey Respondents	
Characteristic	N (%)
Sex (n=34)	
Female	9 (26%)
Male	24 (71%)
Non-Response	1 (3%)
Years of Practice (n=34)	
0-5	9 (26%)
6-10	5 (15%)
11-15	1 (3%)
16-20	3 (9%)
21-25	4 (12%)
25+	11 (32%)
Non-Response	1 (3%)
Past or Current Leadership Position (n=34)	
Yes	16 (47%)
No	17 (50%)
Non-Response	1 (3%)

Figure 1. Barriers to Radiologist Participation in a Medical Imaging Capacity in Developing Countries



Conclusions and Future Implications

The majority of radiologists perceived an unmet imaging need in developing countries and believed that American radiologists have a role to play in meeting those needs. About half of the radiologists expressed interest in international medical imaging work in the future, particularly teleradiology. However, family responsibilities, underdeveloped infrastructure, and lack of information about imaging opportunities in global health remain significant barriers to American private practice radiologist participation in global health programs.