



# Perceived Influence of Medical Students' Community Health Assessment Projects

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**BACKGROUND AND OBJECTIVES:** To achieve overall health, physicians must understand how community and population health impacts individual health. Although several US medical schools have incorporated community health assessment project requirements into traditional curricula, examples in longitudinal integrated clerkships are unknown. This study was designed to assess alumni perceptions of the influence of community health assessment projects, a core component of the University of Minnesota Rural and Metropolitan Physician Associate Program's (RPAP/MetroPAP) 9-month longitudinal integrated curriculum.

**METHODS:** This 2018 study consisted of a descriptive cross-sectional survey of 480 RPAP/MetroPAP alumni who completed 457 community health assessment projects between 2004/2005 and 2016/2017. The authors administered a 14-item survey requesting date and location of RPAP/MetroPAP 9-month placement, name of project, source of project idea, and perception of project influence on professional activities. Quantitative data were collected using 4-point Likert scales. We collected qualitative data with open text boxes.

**RESULTS:** The survey response rate was 42.29% (203/480). A key finding was alumni perceived project ideas arising from community partners had greater impact on their acquisition of several community engagement skills. One-half reported projects influenced their professional activities, evidenced by ongoing community engagement, interest and participation in public health and preventive health initiatives, efforts to learn about specific health issues, social determinants of health and patient advocacy.

**CONCLUSIONS:** This exploratory study suggests medical student community health assessment projects enhance community engagement and soliciting project ideas from community partners increases student acquisition of community engagement skills.

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Since the Association of American Medical Colleges (AAMC) and Institute of Medicine (IOM) recommended improved population health education in medical schools,<sup>1,2</sup> several incorporated community health projects into their core curricular requirements.<sup>3-6</sup>

In 2004/2005, University of Minnesota's (UMN) Rural and Metropolitan Physician Associate Programs (RPAP/MetroPAP), established in 1971/2010 respectively, implemented Community Health Assessment Projects (CHAPs) as part of its Longitudinal Integrated Curriculum (LIC).

RPAP/MetroPAP provides a 9-month community-based educational experience for approximately 40 third-year medical students who live and train in rural and urban underserved communities across Minnesota and western Wisconsin. The goal of RPAP/MetroPAP's CHAP requirement is to teach community engagement skills for effective community partnership to improve population health.

RPAP/MetroPAP students independently access online community-oriented primary care (COPC)<sup>7</sup> learning modules, review public health data, and consult with preceptors and community members to choose a CHAP. Each (1) identifies a population experiencing, or at risk for poor health, (2) defines a health problem, (3) partners with stakeholders to intervene, and (4) evaluates their intervention. Final CHAP products include research papers and posters.

Although students and faculty review the CHAP curriculum annually, its long-term influence on alumni has not been assessed. This exploratory study was designed to assist curriculum design, gather reflective feedback regarding alumni perception of CHAPs effectiveness

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in teaching community engagement skills, and assess CHAP's influence on professional population health activities.

## Methods

This 2018 study consisted of a descriptive cross-sectional survey of 459 RPAP and 21 MetroPAP alumni who completed 457 CHAPs from 2004/2005 through 2016/2017. We obtained contact information from the UMN RPAP/MetroPAP database. Quantitative and qualitative data were collected using the online research platform Qualtrics with 4-point Likert scales and open text boxes. The UMN Institutional Review Board deemed the study exempt.

The authors developed a 14-item survey requesting date, location of RPAP/MetroPAP 9-month placement, CHAP name, project idea source, and perception of project influence on professional activities.

Alumni rated level of agreement with CHAP enhancing community engagement skills and described ongoing participation in community, population or public health initiatives. The authors oversaw all data collection. Reliability and validity of data collection instruments were not measured. Scales and format for questions regarding community engagement skills were adapted from a RPAP/MetroPAP Community Partner Evaluation form.

We summarized survey data with descriptive statistics. Fisher exact tests, comparing nonrandom associations between variables in relatively small sample sizes, were used to compare responses between time intervals, project types, CHAP idea source, and community size based on RUCA codes.<sup>8</sup> We used SAS V9.3 (Institute Inc, Cary, NC) for analysis, and we used NVIVO (version 10.2.2.0, QRS International) for qualitative analysis of text-based data,

including counting and categorizing free-text comments. We independently coded text for context, patterns and processes to understand relevance, significance and meaning, collaboratively grouping comments into themes. Disagreements in categorization were resolved by consensus.

## Results

The survey response rate was 42.29% (203/480). Table 1 compares all program alumni participation years and CHAP categories with respondents. Table 2 demonstrates two-thirds of respondents perceived enhanced community engagement skills in all but cross-cultural sensitivity. One-half (88/176) agreed CHAPs influenced their careers as health care providers, researchers, or educators. Tables 3 and 4 list career-influenced themes and types of community, population, or public health

**Table 1: CHA Project Category and Start Dates for 2004/2005-2016/2017 Alumni vs Survey Respondents**

CHA Project Category	Count (%) of 2004-2005 to 2016-2017 Alumni	Count (%) of Survey Respondents	P Value
Pediatric/adolescent health	114 (24.95)	46 (26.00)	.064
Adult lifestyle	88 (19.26)	30 (16.95)	
Geriatric/end-of-life issues	53 (11.60)	21 (11.86)	
Health care access	51 (12.00)	23 (13.00)	
Disease/injury prevention	48 (10.50)	22 (12.43)	
Adult health issues	38 (8.32)	12 (6.78)	
Adult/pediatric behavioral health	24 (5.25)	5 (2.82)	
Accidents and violence	22 (4.81)	10 (5.65)	
Women's health	16 (3.50)	6 (3.39)	
NOS	3 (0.66)	2 (1.13)	
<b>Total</b>	<b>457 (100)*</b>	<b>177 (100)</b>	
<b>Year Started RPAP/MetroPAP Program</b>			
2004/2005-2009/2010	230 (47.91)	49 (27.68)	<.001***
2010/2011-2013/2014	137 (29.97)	57 (32.20)	
2014/2015-2016/2017**	113 (23.54)	71 (40.11)	
<b>Total</b>	<b>480 (100)*</b>	<b>177 (100)</b>	

Abbreviations: CHA, community health assessment; RPAP/MetroPAP, University of Minnesota Rural and Metropolitan Physician Associate Program.

\* Between 2004/2005-2016/2017, two or more students partnered on 30 CHAPs resulting in a total of 457 separate projects completed by 480 program alumni.

\*\* This group is likely overrepresented by program alumni currently in residency training.

\*\*\* P values <.05 are considered statistically significant.

**Table 2: RPAP/MetroPAP Alumni Perception of CHA Project Influence on Community Engagement Skills and Professional Activities**

The CHA Project Enhanced My...	Somewhat or Strongly Agree	Somewhat or Strongly Disagree	Total Responses
Knowledge of my CHA subject area	158 (91.86%)	14 (8.14%)	172
Ability to implement community-based interventions	142 (83.04%)	29 (16.96%)	171
Ability to implement community partnerships	140 (81.40%)	32 (18.60%)	172
Professionalism	127 (74.27%)	44 (25.73%)	171
Communication skills	124 (72.51%)	47 (27.49%)	171
Teamwork	120 (70.18%)	51 (29.82%)	171
Knowledge and understanding of health disparities	116 (67.84%)	55 (32.16%)	172
Cross-cultural sensitivity	93 (54.71%)	77 (45.29%)	170
Influenced my career as a health care provider, researcher, or educator	88 (50%)	88 (50%)	176

Abbreviations: RPAP/MetroPAP, University of Minnesota Rural and Metropolitan Physician Associate Program.; CHA, community health assessment.

**Table 3: Themes From Content Analysis: Influence of CHAP on Career as a Physician, Researcher, or Educator**

Theme	Representative Quotes
Community engagement	“Gave me a framework to listen to the community and take action, leverage existing resources & create partnerships to help empower the community.”
	“...it gave me an opportunity to look deeper at an issue affecting the local community and do something positive.”
	“It helped me see how easy it is to effect change by working in concert with community partners.”
	“No matter the topic, demonstrates how family doctors are leaders & teachers in small communities.”
Role of public health and preventive health services	“As a family physician, it’s critical to know the pulse of the community and prevention; community health is important.”
	“I continue to have a strong interest in pediatric weight management, obesity prevention, promotion of healthy eating, physical activity & decreasing screen time.”
	“... it was really powerful to observe the community & promote health in a space outside the clinic. It was wonderful to feel our work & the work of the youth was impacting a couple dozen youth at a time.”
	“It helped me realize the strength of public health resources for my patients.”
	“It provided me with another opportunity to utilize my MPH and how I might incorporate Public Health research in the form of needs assessment in the future.”
Gain in knowledge or understanding of subject area	“Eye opening to hear the misconceptions & lack of knowledge in our youth; makes me better at communicating with my teen patients.”
	“... any project like this helps build skills for future research or QI projects.”
	“Made me aware how patients are not aware of what goes into medical decision making. This started my love of palliative care and hospice.”
	“Homelessness introduces so many variables to advance care planning that I feel much more comfortable doing it more generally.”
	“I know that I want to work with refugee health in my future practice.”
	“Increased my knowledge of diabetes education and the impact of cultures on diabetes management.”
	“Didn’t know the extent to which disparities existed.”

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Table 3: Continued

Theme	Representative Quotes
Importance of advocacy	“Encouraged my interest in community health, community engagement and advocacy.”
	“Increased my awareness of the potential that lies in group health education. Increased my interest in research and advocacy for community-based and patient-driven health management.”
	“The CHA provided me with an opportunity to get involved in my community as a volunteer and as an advocate. I learned more about the people behind the issues I was researching.”
Little or no impact	“It was difficult to come up with a feasible, community supported project. My idea was generated from myself rather than the community, so I don't feel like it made a large impact.”
	“...I feel like it got in the way of focusing on the things I needed to. It was one more thing to keep me from studying... and spending time in the operating room.”

Abbreviation: CHAP, community health assessment program.

**Table 4: Themes From Content Analysis: Community, Population and Public Health Activities in Which RPAP/MetroPAP Alumni Have Previously, or Currently Participate**

Theme	Representative Quotes
Health promotion	“A ‘shop with a doc’ program wherein I (and three of my partners) toured a grocery store with community members in a group setting to educate them on healthy food choices.”
	“Our practice is part of a larger group of pediatric practices in the area which pool money and resources for services (lactation, nutrition) in our offices, pilot programs/grants, etc.”
	“Providing health education in jails.”
	“Providing programming at elementary school and services at a homeless shelter.”
	“Started a community-based group weight loss program for people with serious mental illness.”
Health systems reform and public health initiatives	“I oversee & co-founded a program in which we implement community organizing principles into the PCMH... Over the last 2 years, we worked on the community-identified issue of affordable housing and developed three campaigns... the greatest impact to me is flattening the hierarchy in the clinic so that patients are empowered to created change with the clinic's support.”
	“I am the medical advisor for the ...county public health advisory committee and I am the medical director for the ... crisis nursery...”
	“...I continue to work on the PCMH within my clinic to improve community care.”
	“I am on the ...county board of health and human services.”
Specific health initiatives	“I am a member of the [state]reproductive health initiative that is reaching out into the community to provide education and contraceptive options.”
	“[Promoting] Asthma Action Plans; [addressing the] opioid crisis.”
	“Improving B/P, decreasing A1C, increasing colon cancer screening in my clinic patients.”
	“Kidney disease screening.”
Volunteerism	“Obstructive Sleep Apnea screening in an INR clinic.”
	“Boys and Girls Club, Salvation Army Clinic.”
	“Extensive workforce development initiatives in partnership with tribal communities.”
	“...am on a community impact team for the United Way.”

Abbreviations: RPAP/MetroPAP, University of Minnesota Rural and Metropolitan Physician Associate Program; PCMH, patient centered medical home.

activities in which alumni participated.

We compared perceived engagement skill acquisition to CHAP idea source. Table 5 shows alumni perceived gaining significantly greater knowledge of CHAP subject, ability to create community partnerships, and teamwork skills when CHAPs were identified by community, versus by preceptors or themselves. Data also shows they perceived CHAPs more important to the RPAP/MetroPAP experience.

### Discussion

Though recent studies have shown enhanced short-term acquisition of community health assessment knowledge and skills in preclinical years,<sup>9,10</sup> data on perceived long-term influence of CHAP's completed on traditional clerkships and LIC's have not been reported. The RPAP/MetroPAP CHAP requirement was designed to emphasize the physician role in forging community partnerships to improve population health. This necessitates teaching community engagement skills and may be more easily accomplished on LICs, where medical students are embedded in primary care settings for extended time. Alumni perception of increased skill acquisition with community

partner-identified projects should influence CHAP curricular design.

The significance of finding half of alumni agree CHAPs influenced their career is unclear, due to the time passed since participation. However, qualitative analysis of favorable comments reveals alumni gained understanding of ways physicians can assess and respond to community needs, learn about public and preventive health initiatives and advocate for patients. Examples of professional activities in which alumni engaged demonstrate their continued interest in promoting population health within the community.

### Limitations

The study survey instrument was created by the authors and not validated prior to use. We did not provide definitions of survey terms; different interpretations may have influenced responses. Low response rate and potential nonresponse bias are also limitations. Those influenced most or least strongly by RPAP/MetroPAP may have been more likely to complete surveys. There is no within-sample comparison of CHAPs to other LIC curricular elements, potentially contributing to a reporting bias toward desirable answers. Recall bias is a study limitation, but

data retrieval from program records supplemented the 15.71% (30/191) of alumni reporting no recollection of CHAP details. Since 40.11% (71/176) of respondents may have been residents, residency curricula likely influenced their professional activities.

A commitment to primary care and underserved rural or urban populations is required for student acceptance in RPAP/MetroPAP. Study findings may not be generalizable to academic programs with different student eligibility criteria. This study relies on alumni perceptions and does not test causation or objectively assess learning outcomes. By assessing engagement skills of alumni before and after RPAP/MetroPAP, compared to a matched control group, a more accurate measure of CHAPs long-term effectiveness could be determined.

### Conclusion

Data gathered from this cross-sectional survey of UMN RPAP/MetroPAP alumni provides important information regarding perception of one LIC's CHAP requirement. Findings suggest curricula supporting projects identified by community partners are more effective at enhancing engagement skills acquisition than those identified by

**Table 5: Perceived Community Engagement Skill Acquisition by Source of CHA Project Idea**

The CHA Project Enhanced My...	Project Self-Identified	Project Suggested by Preceptor	Project Identified by Community	P Value
Knowledge of CHA subject area	85 (96%)	12(75%)	29(100%)	*.0038
Ability to implement community partnerships	74(83%)	12 (75%)	29 (97%)	*.0179
Teamwork skills	58 (66%)	11 (69%)	27 (93%)	*.0158
Professionalism	65 (74%)	11 (69%)	26 (90%)	.1261
Communication skills	64 (73%)	11 (69%)	25 (86%)	.1994
Knowledge and understanding of health disparities	57 (65%)	11 (69%)	23 (79%)	.5350
Cross-cultural sensitivity	46 (52%)	9 (56%)	19 (68%)	.4642
Ability to implement community-based interventions	74 (84%)	13 (81%)	27 (93%)	.2089
Was an important part of the RPAP/MetroPAP experience	52 (59%)	9 (56%)	25 (86%)	*.0154

Abbreviations: CHA, community health assessment; RPAP/MetroPAP, University of Minnesota Rural and Metropolitan Physician Associate Program. n (%) reported in the table are those that responded strongly or somewhat agree to the acquired skill or value of the CHA program. P values are from Fischer exact tests.

\*P values less than .05 were considered statistically significant.



students or preceptors. This understanding is key to teaching medical students the importance of community partnership to improve population health.

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