Published in final edited form as:

J Ambul Care Manage. 2020 ; 43(1): 55–70. doi:10.1097/JAC.0000000000000309.

Talk to PAPA: A Systematic Review of Patient/Participant (PAPA) Feedback on Interactions with Community Health Workers using a Depth Analysis Approach

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INTRODUCTION:

Community health workers (CHWs) are an emerging and vibrant healthcare workforce, facilitating a more dynamic patient-centered perspective.¹ They have played an increasingly important role in health interventions /programs, often bridging the gap between clinic and community by facilitating care coordination,^{2,3} health promotion,⁴ and communication between clinicians and patients/program participants⁵ in a manner that is generally assumed to be acceptable to care recipients and ultimately improving health outcomes.⁶⁻⁸ CHW interventions have been identified as an essential strategy to address health disparities for patient-centered medical home (PCMH),⁹ by the NHLBI¹⁰ and the Centers for Disease Control and applauded for their contributions to the Institute for Healthcare Improvement's Triple Aim objectives.³

Yet, despite the attention being paid to CHWs as an innovative workforce, there is less information on how recipients of the care provided by CHWs- whether patients or program participants of health promotion and disease prevention/control interventions-experience

such care.¹¹ CHWs have typically worked with under-resourced, multicultural patients, who have relatively worse health outcomes, higher health disparities and a socially marginalized status. Thus, it is especially important to learn about such patients' care experiences. Our paper focuses on this gap in the literature with a systematic review to assess what we know about Patients/(program) Participants (PAPAs) experience of CHW care.

Biomedical research and clinical practice have moved away from a paternalistic stance to a more patient-centered approach that highlights the importance of including patients in their healthcare decision-making and consulting their input in gathering evidence that underpins their care.¹² However, the literature on the assessment of CHW care provision does not follow this trend, given the mostly absent patient voices. There are three key assumptions that lead to PAPA voices being left out of evaluations and discourse about CHWs. First, there is an implicit assumption that PAPAs don't need to be asked about the acceptability of CHW-provided care because CHWs often have similar socioeconomic, cultural, and geographical backgrounds as PAPAs. Consequently, the presence of CHWs to facilitate interactions between marginalized communities/patients and clinics/providers is often assumed to be acceptable to such care recipients, regardless of context or processes involved.

Furthermore, PAPA voices may be left out because it is seen as necessary or sufficient for others, such as doctors, nurses or CHWs to speak for PAPAs.^{2,13} Thus, assumptions get made about what is best for patients without always hearing from them. Finally, PAPA voices may be left out of this literature because of the almost exclusive focus on health outcomes, as defined and prioritized by researchers, providers and health systems. In most of the literature to date, the effectiveness of CHW programs is primarily assessed from the perspective of the health system or research intervention – i.e. relative to patient clinical outcomes or desired intervention outcomes,^{14,15} program cost-effectiveness,^{16,17} and CHW integration into health care systems.^{2,3} When it comes to CHW provided care, very few research/evaluation initiatives go beyond these factors to meaningfully include PAPA perspectives with regard to satisfaction with types of support, quality and acceptability of care, and quality of communication with CHWs, factors that are more likely to be relevant to care recipients.

We propose that PAPA feedback is vital to a holistic evaluation of CHW programs for three key reasons. *First*, in an era of patient-centered care, it is critical to *center* the patient and partner with patients and their families in shaping their care. The presence of relatively newer funding bodies like the Patient Centered Outcomes Research Institute (PCORI) in the United States highlights the widespread acknowledgment of the historical absence of patients' voices in the biomedical research process and requires meaningful participation from patients in the development of the future research evidence-base.¹⁸

Second, the CHW role has evolved in multidimensional ways that requires assessment of patient responses to care provided by CHWs as opposed to a taken for granted assumption that CHWs always represent the PAPA. For example, when CHWs are integrated into clinical settings, there is an inherent tension between their role as patient advocates versus bridges to patients for clinical staff.^{19,20} Thus, despite having a great deal of similarity with

their care recipients and identifying with their concerns, CHWs may also have to be accountable to the potentially conflicting requirements of their employers. Consequently, CHWs may not always be able to represent the interests of their patients and this may have some negative consequences for how PAPAs experience the care provided by CHWs.

Third, many PAPAs served by CHWs often exist on the margins of society, vulnerable and disproportionately experiencing health disparities.^{14,21} Because they typically have clinically complex conditions, securing their feedback can be more difficult than with other types of patients. Furthermore, they may also have additional social challenges such as low health literacy or limitations with the English language that may result in their voices being absent from patient input. It is important for CHWs, clinics and intervention programs to actively solicit feedback from such PAPAs so that CHWs and health systems can learn about what works and what does not work and in which contexts and thus continually improve CHW provision of care.

The purpose of this article is to provide a critical, systematic review of the existing evidence on PAPA experiences of CHW-provided care. To the best of our knowledge, this is the first effort to do so. Specifically, we examine the types of interventions/programs in which the interactions took place, the roles and characteristics of CHWs, patient demographics and health needs, PAPA-CHW interaction features (e.g. frequency, duration, mode etc.) and evaluation context and methods. Our review addresses the gap in the literature by 1) describing the scope and characteristics of studies with PAPA feedback; 2) developing an approach that assesses varying depths of PAPA feedback in these articles; and 3) outlining why assessing depth of PAPA feedback matters for evidence-based discussions of patient-centered care.

METHODS

Below we outline the methodological steps we followed in this review process reflected in the PRISMA Table (See Figure 1). *Identification*- Using Boolean operators to connect and further expand search terms, a concurrent search of CINAHL, Web of Science, Sociological Abstracts, Google Scholar, and PubMed performed on May 17th, 2017 produced 9,560 records. We intentionally kept our search broad to encompass all possible programs or evaluations that involved a CHW-type role and as many typical variations of the key search terms (CHW, patient/participant and feedback/experiences); thus, the large number of initial search results was expected.²² (For full search strategy, terms, and justification please see Methodological Supplement.) After duplicates were removed (n=1,465) we had a total of 8,095 initial references. *Screening*- After exporting all of these references to EndNote, duplicates were removed, and results were preliminarily screened using just titles and abstracts. References were removed if they met the following exclusion criteria: (1) outside the US (2) unpublished or not peer-reviewed (3) not about CHW-based programs (4) no PAPA feedback. *Eligibility*- During the paired full-text review of the remaining articles (n=147), each was assigned to two independent reviewers who marked references for exclusion if they did not meet all eligibility criteria as outlined in the PRISMA table. Any articles with discordant status between reviewers (n=19), were addressed by a third reviewer,

resulting in the final inclusion of 37 articles. In addition, the eligibility stage included an extensive data extraction process for each article, resulting in Table 1.

Depth Analysis-

Repeated collaborative reviewing of the data yielded a subtle but noticeable division within the final included references (n=37) in the amount and characteristics of the PAPA feedback provided. Some articles contained only superficial feedback describing PAPA experiences, while others mined additional value from their direct perspectives and rich descriptions. The term *depth* was used to characterize this quality. Through multiple iterations, we were thus able to develop and refine 5 *depth*-dimensions-- *focus*, *context*, *meaning*, *range* and *voices*. *Focus*- The most initial indicator and dimension of depth was found if PAPA feedback about their experience with CHWs was either explicitly stated and discussed as a major finding or was the topic of a substantial amount of the results. *Context*- The second dimension of depth was demonstrated by PAPA feedback that describes how, when or where their interaction or experience with CHWs occurred. *Meaning*- The third depth-dimension conveys the personal connection or individual relevance of interacting with CHWs, from the PAPA perspective. *Range*- The fourth depth-dimension was determined by the PAPA feedback that reflected the presence of a spectrum of responses or feelings; demonstration of *range* included Likert-scaled responses about CHWs as well as qualitative data conveying PAPA frustrations, suggestions for change, or even ambivalence about their CHW experiences. *Voices*- The last depth-dimension captures the value of direct quotes from examples of PAPA feedback, versus simply summarizing the distilled themes or concepts of aggregated feedback. We avoided defining *depth-dimensions* that could not be applied to the array of references regardless of the type, size, or duration of intervention, evaluation methodology, or reporting limitations.

For the first round of scoring, each of the 37 articles was reviewed by the team and given an initial depth-score. One point was given for each of the 5 depth dimensions if the article demonstrated at least one instance of each respective dimension, for a maximum score of 5. During this initial scoring process each depth-dimension was further refined and more explicitly defined. (See Methodological Supplement for additional details) Using these final 5 depth-dimensions, each reference was once again reviewed and independently assigned a depth-score by two different reviewers. Results of the depth scoring for the included articles (n =37) are presented below in Tables 2 and 3.

RESULTS

Table 1 outlines how a wide range of health issues, intervention designs, geographic regions, and PAPA populations are represented in our 37 articles. CHWs were identified by a range of professional titles, and job prerequisites (e.g., having similar health experiences or church attendance as PAPAs). They were responsible for diverse duties (e.g. patient navigation, education, or intervention evaluation), and interacted with PAPAs distinctly depending on intervention design (by phone, at home, in the clinic, in group lessons, etc.). This table also reflects a range of evaluations (embedded, stand-alone or follow-up assessments) and methods (interviews, surveys, focus groups and observations) used to elicit PAPA feedback.

Table 2 provides a brief analysis of total depth scores as they relate to the dimensions of *focus*, *context*, *meaning*, *range* and *voices* of PAPA feedback. We characterized the two clusters of depth scores as *deep* if they scored four or five points vs *surface* if they scored one, two, or three points. Overall, the five dimensions were strongly represented in the 18 *deep* articles, with the highest representation for *context* and *meaning* (100%), followed by *voices* (94% - one survey-based article did not have *voices*), *focus* (89%) and *range* (67%). Of the 19 *surface* articles, the dimension of *context* (84%) was strongly represented, with only 3 articles not having context. However, the remaining dimensions were poorly represented in the *surface* articles: 18 of the 19 did not have a *focus* on PAPA feedback, 16 did not have *range*, 10 did not have *meaning*, and eight did not have *voices*. Of both deep and surface articles, *context* was the dimension most represented in the included articles (92%) and *range* was least represented (43%).

In Table 3 (which is included as a supplement), we provide direct quotes and examples from the spectrum of demonstrated instances of the five depth dimensions in each of the 37 included articles. While we conducted a comprehensive review of all the instances of these five depth dimensions within each article, we have selected illustrative examples here to provide a sense for the breadth and embodiment of these dimensions. It is important to note that these results demonstrate that this depth analysis does not have a bias towards any particular type of method. Because the assessment of the dimensions of *focus* and *voices* was determined by a yes/no question, these results have already been addressed in Table 2. Here we turn to key themes that emerged in the analysis of examples of the remaining depth dimensions: *context*, *meaning* and *range*.

Dimension of Context:

Results here are associated with examples of PAPA feedback that included contextual information such as “where, when and how” their interactions with CHWs occurred and mattered. With regards to “where” the interaction took place with CHWs, three key locations emerged in the PAPA feedback: 1) the health care system where learning how to navigate the system was described vis-a-vis making appointments, obtaining referrals, and filling prescriptions; 2) the doctor’s office and CHW presence and impact on doctor-patient communication; 3) Other everyday settings and importance of CHW interactions in a variety of activities from running errands, getting rides to “playing checkers with me.” With regards to “when” the interactions occurred, CHWs’ immediate availability was contrasted with other medical staff. In one instance where interactions with CHWs lasted over a longer period, PAPAs talked about the evolution of the relationship from “the taxicab phase” to “therapy away from the therapy room.” With regards to the “how” of interactions, several illustrative themes emerged from CHWs giving hands-on instruction, modeling healthy behaviors, explaining things, goal setting and accountability, health care reminders, and doing things that other care providers couldn’t or wouldn’t do.

Dimension of Meaning:

This depth dimension describes components of personal connection and individual relevance that PAPAs included in their feedback about CHW interactions, answering questions about “Who CHWs were,” “How CHWs made them feel” and “Why interactions mattered.” Who

the CHWs were mattered to PAPAs, whether CHWs themselves had experienced the health condition and could be role models or had developed an identity as champions against a condition, such as “cholesterol girl.” CHWs were referred to in familial terms such as “... she is like my momma, she gets on me about health” and “Not even my kids check up on me like that.” Interestingly while most PAPAs appreciated that CHWs were fellow community members, some felt the exact opposite when they interpreted shared communal identity as inadequacy: “How would you like to be sent to your neighbor for health care?” Another important theme that emerged in the dimension of *meaning* was “how CHWs made them feel.” PAPA sentiments ranged from not feeling ashamed – “She makes me feel like I have insurance, she does not treat me like I’m underclass,” to being understood and accepted, “treated like a human being”, not an anonymous patient, “(CHW) made me feel like someone cared about me,” and “... helped me feel confident and much less worried.” Finally, PAPAs reflected on why these interactions mattered to them. They spoke of the “compañerismo”, the Spanish word for companionship, where the CHWs advocate for them and become a source of encouragement - “You need someone to get over fences.” These interactions also mattered in empowering PAPAs to “...be heard by someone other than their doctor” and “... be part of the conversation in deciding your health.”

Dimension of Range:

The fourth depth dimension of *range* reflected a spectrum of responses that included both positive and negative feelings/frustrations or ambivalence from PAPAs about experiences with CHWs. The positive end of the spectrum for *range* included what typically has been observed with CHWs being very helpful and important to PAPAs as also expressed in the *context* and *meaning* sections above. The negative end of the spectrum extended from ambivalence to outright distrust and frustration with perceived limitations of CHWs, both in terms of their personal characteristics and their role in the healthcare system. For example, they expressed ambivalence (e.g. seeing the CHW service as redundant) or doubted the quality of the CHW (until they learned about the CHW’s affiliation with New York University). CHW personal characteristics that inspired concern for PAPAs included age of CHW, whether the CHW had direct personal experience with and was sufficiently knowledgeable about their health condition, and whether the CHW was a neighbor or coworker (i.e. not adequately equipped to provide healthcare advice). Limitations of the CHWs’ role in the healthcare system or program also led to frustration where patients/ participants talked about CHWs being too busy to provide the necessary support (e.g. feeling “penciled in” into busy schedules). Another instance of perceived limitations of the CHW role was illustrated in one patient’s reluctance to include the CHW in the primary care visit for fear of introducing conflict into the already-established rapport of the patient-provider relationship. “I don’t want her to think that I’m asking you (CHW) and overstepping her.”

DISCUSSION

Overall, we learned that existing PAPA feedback on CHW interactions was collected with multiple methods, within a broad range of interventions/ programs and in both embedded and stand-alone evaluation processes as reported in Table 1. Despite this breadth, some important details stand out: diabetes is the most common health issue studied; when PAPAs’

or CHWs' gender was noted, it was most likely female; Latinos made up the primary demographic focus; and, the majority of interventions involved five or more CHW-PAPA interactions. The evaluation methods varied as well – those using in-depth interviews or focus groups solicited more data from PAPAs about their reactions to CHW than those relying just on surveys. Observations were only used in two studies but add an interesting option to analyze how participants react to CHWs.

The tenor of the PAPA feedback tended to be overwhelmingly positive; however, conducting a depth analysis allowed us to better characterize and glean insights from the feedback. As reported in Table 2, the development of a method for describing differences between *deep* and *surface* articles confirmed internal validity in the multiple accounts of PAPA feedback across articles. (i.e. *deep* articles scored substantially higher and *surface* article vice versa for all five dimensions). For instance, when we analyzed the *surface* articles, we found that when there was little representation of dimensions like *focus*, *meaning*, *range* and *voices*, the amount and quality of PAPA feedback was vastly lower than in the *deep* articles. In addition, having a large presence of *focus* (88%) in the *deep* articles provided opportunities to disentangle nuanced and complex concepts of context, meaning, and range of feedback responses, often in the PAPA's own voices.

The analysis of examples from the depth dimensions in Table 3 provided such an opportunity to further assess nuanced information about PAPA-CHW interactions. The examples from the *context* and *meaning* dimensions confirm much of what we already know about why PAPAs value CHWs, illustrating a variety of very positive ways that CHWs made PAPAs feel and multiple manners in which PAPAs identified with CHWs (i.e. community member, role model, like a family member etc.) However, *range* uniquely counters this trend. Whereas PAPAs appreciated CHWs' shared backgrounds and the different types of support they provided, sources of PAPA frustration ironically centered around the same shared backgrounds and associated CHW limitations, both in terms of their personal characteristics and their role in the healthcare system. In several articles, PAPAs expressed concerns about CHWs not knowing enough about health topics and in some instances, the CHWs' shared background became confirmation of suspected discrimination for some PAPAs, best illustrated in the quote: "How would you like to be sent to your neighbor for health care?" Similarly, PAPAs expressed concerns about CHWs' limited roles in the healthcare system, whether it was that PAPAs wanted more support from CHWs or concerns that the advocacy provided by CHWs would be perceived as "overstepping" their relationships with their providers.

As mentioned already, the literature on CHWs assumes an unstated, unilaterally positive, PAPA evaluation of CHWs. This may explain why *range* was the least demonstrated dimension (43%) in these articles, since a range of responses was either not solicited or not included in much of the data. However, what we learned from this exercise is that consideration of PAPA perspectives should not be limited to one aspect of their experience. Our results in Table 2 and 3 demonstrate that a depth analysis matters and taking such analyses into account when designing and conducting evaluations of CHW programs may be crucial in enhancing health systems' and CHWs' abilities to develop and administer more

effective, evidence-based patient-centered care that will likely lead to better health outcomes.

There are several key takeaways here about best practices for evaluating PAPA-CHW interactions. First, design evaluations with a *focus* on PAPA feedback to obtain a richer spectrum of data, not only with contextual details about the care provided by CHWs but also about what this care means to the PAPAs. Second, solicit a *range* of responses, which allows PAPAs to express both their appreciation and ambivalence/concerns about CHW-provided care and which can offer valuable information to design and implement more effective and acceptable care provision. Third, allow PAPAs a chance to share their experiences in their own *voices*, which can provide a more contextualized understanding of such interactions.

We note a few limitations of this review. First, interventions/programs included many CHW roles in a variety of settings, and PAPA-CHW interactions and their quality varied, making it difficult to compare across feedback. However, the inclusion of the depth dimensions provided an opportunity to validate patterns internally, based on the presence or absence of the depth dimensions. Second, this depth dimension approach only accounted for the presence or absence of at least one demonstrated instance of each depth dimension; we did not capture the total number of demonstrated instances. Nevertheless, Table 3 provides a rich account of the variability of dimensions and a robust picture of what the data illustrates within a given dimension. Third, while we extracted data on quality of the included articles, we did not report indicators of quality (i.e. validity, generalizability, ethics) since these indicators were not consistently reported across articles. Finally, PAPA characteristics varied and represented many heterogeneous populations groups (Table 1) which makes it difficult to generalize findings about PAPA-CHW interactions for a given subgroup.

In summary, in this article, we examine a broad array of programs and interventions in healthcare settings and communities and thus begin to address the gap in the literature on PAPA feedback on CHW-provided care in these contexts. Through the development of a depth analysis approach, we were able to disentangle key elements of PAPA feedback that could be important to improving patient-centered care. Our findings support the need to be more rigorous in soliciting feedback and understanding PAPA challenges when receiving care from an emerging workforce such as CHWs. While CHWs have proven competence to promote health equity through care coordination and social support for vulnerable populations, developing a better understanding of those factors that allow PAPAs to trust CHWs and addressing potential sources of PAPA frustrations may help CHWs be more effective in delivering patient-centered care. The depth analysis provides the methodological underpinning to further assess the complexities of such feedback. We argue that by soliciting focused, contextually-sensitive feedback that includes a range of responses on what is meaningful to PAPAs in their own voices, we can better learn about how CHWs can provide more effective and acceptable care.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Conflict of Interests and Sources of Funding: No Conflict of Interests were declared. The first author was supported by NIH National Center for Advancing Translational Science (NCATS) UCLA CTSI Grant Number UL1TR001881 and NIH National Institute for Minority Health and Health Disparities Charles R. Drew University of Medicine and Science Accelerating Excellence in Translational Science (AXIS) Grant Number 3U54MD007598-09S1

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Fig. 1.
PRISMA Diagram of Systematic Review Process

TABLE 1.

Characteristics of Final Included Articles

Reference Citation	Intervention		CHWs			PAPAs		CHW-PAPA Interaction(s)				Evaluation		
	Health Issue	Design/ Duration ^a	Site	Title	Gender/ Ethnicity ^b	Background	Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
Albarán, C.R., Heilenann, M.V. & Koniak-Griffin, D. (2014) Promotoras as facilitators of change: Latinas' perspectives after participating in a lifestyle behaviour intervention program. Journal of Advanced Nursing 70(10), 2303–2313. doi: 10.1111/jan.12383	Cardio-vascular Risk	RCT ^d ; 0-6 mo.	CA	Promotora	All Female; Latinx	Related work experience	All Female; Latinx	No	5+	Phone & In-person	1-on-1 & Groups	Education	Embedded	Interviews
Battaglia, T. A., McCloskey, L., Caron, S. E., Murrell, S. S., Bernstein, E., Childs, A., ... & Bernstein, J. (2012). Feasibility of chronic disease patient navigation in an urban primary care practice. The Journal of ambulatory care management, 35(1), 38-49.	Cancer & Multiple Chronic Conditions	Feasibility/ Pilot study; 0-6 mo.	MA	Patient Navigator	<i>Neither Spec.^e</i>	Related work experience	All Female; <i>Unspec. Ethnicity</i>	No	<i>Not Spec.^f</i>	Phone & In-person	1-on-1	Healthcare coordination & Research/ Recruitment	Post-Intervention	Interviews
Cabral, L., Strother, H., Muhr, K. , Sefton, L. and Savageau, J. (2014), Clarifying the role of the mental health peer specialist in Mass., USA: insights from	Mental Health (MH)	Varied ^g ; Ongoing	MA	Peer Specialist (MH)	<i>Neither Spec.</i>	Shared PAPA health status/ experience	<i>Neither Spec.</i>	No	<i>Not Spec.</i>	Phone & In-person	1-on-1	Education & Social Support	Post-intervention	Interviews

Reference Citation	Intervention		Site	CHWs		PAPAs		CHW-PAPA Interaction(s)				Evaluation		
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b	Background	Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
peer specialists, supervisors and clients. Health Soc Care Community, 22: 104-112. doi: 10.1111/hsc.12072	HIV Primary Care & Prevention for MSM ⁱ	RCT & Program Evaluation; 6-12 mo.	Not Spc.	Peer Counselor & Prevention Case Manager	Males & Female; <i>Unspc. Ethnicity^j</i>	Shared PAPA health status/ experience	All Male; African American, White, & Hispanic	No	^h Var.	In-person	1-on-1	Education	Embedded	Interviews
Driskell, J. R., O'Leirigh, C., Covahey, C., Ripton, J., Mayer, K., Perry, D. H., ... & Safren, S. (2010). Building program acceptability: Perceptions of gay and bisexual men on peer or manager prevention case relationships in secondary HIV prevention counseling. Journal of gay & lesbian social services, 22(3), 269-286.	Diabetes & Depression	Program Evaluation; Ongoing	TX	CHW ^k	<i>Neither Spc.</i>	<i>None Spc.</i>	Male & Female; <i>Unspc. Ethnicity</i>	Yes	Var.	In-Person	1-on-1	Education, Social Support, & Healthcare coordination	Concurrent & Standalone	Focus groups
Gimpel, N., Marcee, A., Kennedy, K., Walton, J., Lee, S., & DeHaven, M. J. (2010). Patient perceptions of a community-based care coordination system. Health Promotion Practice, 11(2), 173-181.	Diabetes	Program Evaluation; 6-12 mo.	MI	Family Health Advocates	Male & Female; <i>Unspc. Ethnicity</i>	Experience with PAPA community	Male & Female; Latinx & African American	No	5+	Phone & In-person	1-on-1 & Groups	Social Support & Healthcare coordination	Concurrent & Standalone	Interviews
Heisler, M., Spencer, M., Forman, J., Robinson, C., Shultz, C., Palmisano, G.														

Reference Citation	Intervention		Site	CHWs		Background	PAPAs		CHW-PAPA Interaction(s)				Evaluation	
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b		Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
& Kieffer, E. (2009). Participants' assessments of the effects of a community health worker intervention on their diabetes self-management and interactions with healthcare providers. American journal of preventive medicine. 37(6), S270-S279.	Hypertension	Feasibility/ Pilot Study; 0-6 mo.	NY	CHW	Male & Female; Filipino	Experience with PAPA community	Male & Female; Filipino	No	5+	Phone & In-person	1-on-1 & Groups	Education & Social Support	Post-intervention	Interviews
Katigbak, C., Van Devanter, N., Islam, N., & Trinh-Shevrin, C. (2015). Partners in health: a conceptual framework for the role of community health workers in facilitating patients' adoption of healthy behaviors. American Journal of Public Health, 105(5), 872-880.	Mental Health	Program Evaluation; 12+ mo.	U.S.	Compeer volunteer	Male & Female; Mostly White	Shared PAPA health status/ experience	Male & Female; Mostly White	No	5+	In-Person	1-on-1	Social Support	Concurrent & Standalone	Interviews

J Ambul Care Manage. Author manuscript; available in PMC 2021 January 01.

Reference Citation	Intervention		Site	Title	CHWs		Background	PAPAs		CHW-PAPA Interaction(s)				Evaluation	
	Health Issue	Design/ Duration ^a			Gender/ Ethnicity ^b	Gender/ Ethnicity		Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods	
Journal of Social Psychiatry, 55(4), 291-305 Meier, E. R., Olson, B. H., Benton, P., Eghtedary, K., & Song, W. O. (2007). A qualitative evaluation of a breastfeeding peer counselor program. Journal of Human Lactation, 23(3), 262-268.	Breast-feeding	Program Evaluation; 12+ mo.	MI	Peer Counselor	All Female; Varied Ethnicity	Experience with PAPA community	All Female; Varied Ethnicity	Yes	5+	Phone & In-person	1-on-1	Education & Social Support	Concurrent & Standalone	Focus groups	
Davis, K. L., O'Toole, M. L., Brownson, C. A., Llanos, P., & Fisher, E. B. (2007). Teaching How, Not What. The Diabetes Educator, 33(S6), 208S-215S.	Diabetes	Program Evaluation; 6-12 mo.	AZ, CA, TX & MA	CHW or Promotora	<i>Neither Spec.</i>	<i>None Spec.</i>	Male & Female; Latinx	Yes	Var.	Phone & In-person	1-on-1 & Groups	Social Support & Healthcare coordination	Concurrent & Standalone	Interviews	
Green, C. A., Janoff, S. L., Yarborough, B. J. H., & Paulson, R. I. (2013). The recovery group project: development of an intervention led jointly by peer and professional counselors. Psychiatric Services, 64(12), 1211-1217.	Mental Health & Stress	RCT & Feasibility/ Pilot study; 0-6 mo.	Pacific NW	Peer Counselor	<i>Neither Spec.</i>	Shared PAPA health status/ experience	<i>Neither Spec.</i>	No	5+	In-Person	Groups	Education	Post-intervention	Interviews & Surveys	
Kangovi, S., Mitra, N., Grande, D., White, M. L., McCollum, S., Sellman, J.,...& Long, J. A.	Post-Hospital Outcomes	RCT; 0-6 mo.	PA	CHW	Male & Female; <i>Unspec. Ethnicity</i>	Related work experience	Male & Female; <i>Unspec. Ethnicity</i>	Yes	<5	Phone & In-person	1-on-1	Education, Social Support, & Healthcare coordination	Post-intervention	Interviews & Surveys	

Reference Citation	Intervention		Site	CHWs			PAPAs		CHW-PAPA Interaction(s)				Evaluation	
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b	Background	Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
(2014). Patient-centered community health worker intervention to improve posthospital outcomes: a randomized clinical trial. JAMA internal medicine, 174(4), 535-543.														
Lichtveld, M. Y., Shankar, A., Mundorf, C., Hassan, A., & Drury, S. (2016). Measuring the developing therapeutic relationship between pregnant women and community health workers over the course of the pregnancy in a study intervention. Journal of community health, 41(6), 1167-1176.	Pregnant & Postpartum Mental Health	Program Evaluation; 12+ mo.	LA	CHW	All Female; African American & White	Experience with PAPA community & Shared PAPA health status/ experience	Unspc. Gender; African American & White	No	5+	In-Person	1-on-1	Education, Social Support, & Healthcare coordination	Embedded	Interviews
Lopez, P. M., Islam, N., Feinberg, A., Myers, C., Seidl, L., Drackett, E., ... & Wyka, K. (2017). A place-based community health worker program: feasibility and early outcomes, New York City, 2015. American journal of preventive	Diabetes, Hypertension & Asthma	Feasibility/ Pilot study; 0-6 mo.	NY	CHW	Neither Spc.	Experience with PAPA community	Male & Female; African American, White & Hispanic	Yes	5+	In-Person	1-on-1	Education & Social Support	Post-intervention	Surveys

Reference Citation	Intervention		Site	CHWs		PAPAs		CHW-PAPA Interaction(s)				Evaluation		
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b	Background	Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
medicine, 52(3), S284-S289. Magaña, S., Lopez, K., & Machalícek, W. (2017). Parents taking action: A psycho-educational intervention for Latino parents of children with autism spectrum disorder. Family process, 56(1), 59-74.	Educating parents of children w/ASD	Feasibility/ Pilot study; 0-6 mo.	Mid-west	Promotora	All Female; Latinx	Experience with PAPA community & Shared PAPA health status/ experience	All Female; Latinx	No	5+	In-Person	1-on-1	Education, Social Support, & Healthcare coordination	Embedded	Surveys & Focus groups
Nguyen, T. U. N., Tran, J. H., Kagawa-Singer, M., & Foo, M. A. (2011). A qualitative assessment of community-based breast health navigation services for Southeast Asian women in Southern California: recommendations for developing a navigator training curriculum. American journal of public health, 101(1), 87-93.	Breast & Cervical Cancer	Program Evaluation; Ongoing	CA	Community-based Health Navigators	All Female; Asian American	Experience with PAPA community	All Female; Asian American	Yes	Var.	Phone & In-person	1-on-1 & Groups	Education, Social Support, & Healthcare coordination	Concurrent & Standalone	Interviews & Focus groups
Ursua, R. A., Aguilar, D. E., Wyatt, L. C., Katigbak, C., Islam, N. S., Tandon, S. D., ... & Trinh-Shevrin, C. (2014). A community health worker intervention to	Hypertension Outcomes	Feasibility/ Pilot study; 12+ mo.	NY & NJ	CHW	Male & Female; Filipino	Related work experience & Experience with PAPA community	Male & Female; Filipino	No	5+	Phone & In-person	1-on-1 & Groups	Education, Social Support, Healthcare coordination & Research/ Recruitment	Embedded	Interviews

Reference Citation	Intervention		Site	CHWs			PAPAs		CHW-PAPA Interaction(s)				Evaluation	
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b	Background	Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
improve management of hypertension among Filipino Americans in New York and New Jersey: a pilot study. Ethnicity & disease, 24(1), 67.	Diabetes	RCT & Program Evaluation; 12+ mo.	TX	Promotora	Male & Female; Primarily Hispanic	Experience with PAPA community & Shared PAPA health status/ experience	Male & (mostly) Female; Latinx	Yes	5+	In-Person	Groups	Education & Research/ Recruitment	Embedded	Focus groups
Brown, S. A., & Hanis, C. L. (2014). Lessons learned from 20 years of diabetes self-management research with Mexican Americans in Starr County, Texas. The Diabetes Educator, 40(4), 476-487.	Diabetes	Program Evaluation; 12+ mo.	TX	CHW	All Female; Latinx	Related work experience	Male & (mostly) Female; Latinx	No	5+	Phone & In-person	1-on-1 & Groups	Education, Social Support, & Healthcare coordination	Embedded	Interviews
Collinsworth, A., Vulimiri, M., Sneed, C., & Walton, J. (2014). Community health workers in primary care practice: redesigning health care delivery systems to extend and improve diabetes care in underserved populations. Health promotion practice, 15(2_suppl), 51S-61S.	Diabetes	RCT & Feasibility/ Pilot study; 6-12 mo.	NY	CHW	Unspc. Gender; Korean-American	Experience with PAPA community	Male & Female; Korean-American	No	5+	Phone & In-person	1-on-1 & Groups	Education & Social Support	Embedded	Focus groups
Islam, N. S., Zancowiak J. M., Wyatt, L. C., Chun, K., Lee, L., Kwon, S. C., & Trinh-Shevrin, C. (2013). A														

Reference Citation	Intervention		Site	CHWs		Background	PAPAs		#	CHW-PAPA Interaction(s)			Evaluation	
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b		Gender/ Ethnicity	Low- SES ^c ?		Mode	Context	Function to PAPAs	Design	Methods
randomized-controlled, pilot intervention on diabetes prevention and healthy lifestyles in the New York City Korean community. Journal of community health, 38(6), 1030-1041.	Healthcare Access/Use	Ethnographic Study; 12+ mo.	TX & NM	Promotora	Male & Female; Mostly Hispanic	Experience with PAPA community	Male & Female; Latinx	Yes	Var.	Phone & In-person	1-on-1 & Groups	Education, Social Support, & Healthcare coordination	Concurrent & Standalone	Interviews, Focus groups & Observing
May, M. L., & Contreras, R. B. (2007). Promotor (a) s, the organizations in which they work, and an emerging paradox: How organizational structure and scope impact promotor (a) s' work. Health Policy, 82(2), 153-166.	Depression & Intimate Partner Violence	Feasibility/ Pilot study; 0-6 mo.	OR	Promotora	Female; Latinx	Related work experience	All Female; Latinx	No	5+	In-person	Groups	Education, Social Support & Research/ Recruitment	Embedded	Interviews & Surveys
Nicolaides, C., Mejia, A., Perez, M., Alvarado, A., Celaya-Alston, R., Quintero, Y., & Aguillon, R. (2013). Proyecto Interconexiones: pilot-test of a community-based depression care program for Latina violence survivors. Progress in community health partnerships: research, education, and action, 7(4), 395.	Diabetes	Feasibility/ Pilot study; 6-12 mo.	CA	CHW	Neither Spec.	Related work experience	Male & Female;	Yes	Var.	Phone & In-person	1-on-1 & Groups	Education, Social Support, &	Embedded	Surveys

Reference Citation	Intervention		Site	CHWs			PAPAs		CHW-PAPA Interaction(s)				Evaluation	
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b	Background	Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
Hallen, E., Lee, R., Ketchel, A., ... & Newman, J. (2010). Physician--community health worker partnering to support diabetes self-management in primary care. Quality in Primary Care, 18(6).						African American, White & Hispanic								
Reinschmidt, K. M., Hunter, J. B., Fernandez, M. L., Lacy-Martínez, C. R., Guernsey de Zapien, J., & Meister, J. (2006). Understanding the success of the success of promotoras in increasing chronic diseases screening. Journal of Health Care for the Poor and Underserved, 17(2),256-264.	Primary Care & Prevention	RCT; Varied length	AZ	All Female; Latinx	Experience with PAPA community	All Female; Latinx	No	<i>Not Spec.</i>	Phone & In-person	1-on-1	Education, Social Support, & Healthcare coordination	Post-Intervention	Interviews	
Getrich, C., Heying, S., Willging, C., & Waitzkin, H. (2007). An ethnography of clinic “noise” in a community-based, promotora-centered mental health intervention. Social science & medicine, 65(2), 319-330.	Mental Health/Stress	Feasibility/Pilot Study; >12 mo.	NM	Male & Female; Hispanic	Experience with PAPA community	Male & Female; Hispanic	No	Var.	Phone & In-person	1-on-1	Education & Social Support	Embedded	Interviews	
Hoeflt, K. S., Rios, S. M., Guzman, E. P., & Barker, J. C. (2015). Using	Oral Health Education	Feasibility/Pilot study; 0-6 mo.	CA	All Female; Latinx	Experience with PAPA community	Male & Female; Latinx	Yes	<5	In-person	Groups	Education	Embedded	Surveys	

Reference Citation	Intervention		Site	Title	CHWs		Background	PAPAs		#	CHW-PAPA Interaction(s)			Evaluation	
	Health Issue	Design/ Duration ^a			Gender/ Ethnicity ^b	Gender/ Ethnicity ^b		Gender/ Ethnicity	Low- SES ^c ?		Mode	Context	Function to PAPAs	Design	Methods
community participation to assess acceptability of “Contra Caries”, a theory-based, promotor-led oral health education program for rural Latino parents: a mixed methods study, BMC oral health, 15(1), 103.															
Im, H., & Rosenberg, R. (2016). Building social capital through a peer-led community health workshop: A pilot with the Bhutanese refugee community. Journal of community health, 41(3), 509-517.	Mental Health, Nutrition & Stress	Feasibility/ Pilot Study; 0-6 mo.	VA	CHW	Male & Female; Bhutanese (Refugee)	Male & Female; Bhutanese (Refugee)	Experience with PAPA community	Male & Female; Bhutanese (Refugee)	No	5+	In-person	Groups	Education	Embedded	Focus Groups
Islam, N. S., Wyatt, L. C., Patel, S. D., Shapiro, E., Tandon, S. D., Mukherji, B. R., ... & Trinh-Shevrin, C. (2013). Evaluation of a community health worker pilot intervention to improve diabetes management in Bangladeshi immigrants with type 2 diabetes in New York City. The Diabetes	Diabetes	Feasibility/ Pilot Study; 6-12 mo.	NY	CHW	Male & Female; Bangladeshi	Male & Female; Bangladeshi	Experience with PAPA community	Male & Female; Bangladeshi	No	5+	In-person	1-on-1 & Groups	Education & Social Support	Embedded	Surveys

Reference Citation	Intervention		Site	CHWs			PAPAs		CHW-PAPA Interaction(s)				Evaluation	
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b	Background	Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
Educator, 39(4), 478-493. Molokwu, J., Penaranda, E., Flores, S., & Shokar, N. K. (2016). Evaluation of the effect of a promotora-led educational intervention on cervical cancer and human papillomavirus knowledge among predominantly Hispanic primary care patients on the US-Mexico border. Journal of Cancer Education, 31(4), 742-748.	Cancer	Program evaluation; 0-6 mo.	TX	Promotora	All Female; Latinx	Related work experience	All Female; Majority Hispanic	No	<5	In-person	1-on-1 & Groups	Education	Embedded	Surveys
Pratt, R., Ahmed, N., Noor, S., Sharif, H., Raymond, N., & Williams, C. (2017). Addressing behavioral health disparities for Somali immigrants through group cognitive behavioral therapy led by community health workers. Journal of immigrant and minority health, 19(1),187-193.	Mental Health & CBT	Feasibility/ Pilot Study; 0-6 mo.	MN	CHW	All Female; Somali	Experience with PAPA community	All Female; Somali	No	5+	In-person	Groups	Education, Social Support, Healthcare coordination & Research/ Recruitment	Embedded	Focus Groups
Allen, J. D., Pérez, J. E., Tom, L., Leyva, B., Diaz, D., & Torres, M. I. (2014). A pilot	Cancer	Feasibility/ Pilot Study; 6-12 mo.	MA	Patient Navigator	All Female; Latinx	Experience with PAPA community	All Female; Latinx	Yes	5+	Phone & In-person	1-on-1 & Groups	Education, Social Support, & Healthcare coordination	Embedded	Surveys

Reference Citation	Intervention		Site	CHWs		Background	PAPAs		CHW-PAPA Interaction(s)				Evaluation	
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b		Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
test of a church-based intervention to promote multiple cancer-screening behaviors among Latinas. Journal of Cancer Education, 29(1), 136-143.														
Grzywacz, J. G., Arcury, T. A., Talton, J. W., D'Agostino, R. B., Trejo, G., Mirabelli, M. C., & Quandt, S. A. (2013). "Causes" Of Pesticide Safety Behavior Change in Latino Farmworker Families. American journal of health behavior, 37(4), 449-457.	Occupational health	Feasibility/ Pilot Study; 0-6 mo.	NC	Promotora	Unspec. Gender; Latinx	Not Specified	Male & Female; Latinx	No	5+	In-person	Groups	Education	Embedded	Surveys
Ingram, M., Piper, R., Kunz, S., Navarro, C., Sander, A., & Gastelum, S. (2012). Salud Si: a case study for the use of participatory evaluation in creating effective and sustainable community-based health promotion. Family & community health, 35(2), 130-138.	Healthy Eating & Stress reduction	Program Evaluation; 0-6 mo.	AZ	Promotora	Female; Latinx	Experience with PAPA community	All Female; Latinx	No	5+	In-person	Groups	Education, Social Support & Research/ Recruitment	Embedded & Post-Intervention	Interviews
Janiszewski, D., O'Brian, C. A., & Lipman, R. D. (2015). Patient experience in a coordinated care	Diabetes	Program Evaluation; Varied length	OH, TN & CA	Diabetes educators	Neither Spec.	Related work experience	Male & Female; African American, White & Hispanic	No	Var.	In-person	Groups	Education & Healthcare coordination	Concurrent & Standalone	Focus Groups

Reference Citation	Intervention		Site	CHWs		Background	PAPAs		CHW-PAPA Interaction(s)				Evaluation	
	Health Issue	Design/ Duration ^a		Title	Gender/ Ethnicity ^b		Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
model featuring diabetes self-management education integrated into the patient-centered medical home. The diabetes educator, 41(4), 466-471.	Diabetes	RCT; 6-12 mo.	NC	Non-professional Peer Counselor	All Female; African American	Experience with PAPA community & Shared PAPA health status/ experience	All Female; African American	No	5+	Phone & In-person	1-on-1 & Groups	Education & Social Support	Embedded	Surveys
Keyserling, T. C., Samuel-Hodge, C. D., Ammerman, A. S., Ainsworth, B. E., Henriquez-Roldán, C. F., Elias, T. A., ... & Bangdiwala, S. I. (2002). A randomized trial of an intervention to improve self-care behaviors of African-American women with type 2 diabetes: impact on physical activity. Diabetes care, 25(9), 1576-1583.	Diabetes	Feasibility/ Pilot Study; 6-12 mo.	PA	Promotora	All Female; Latinx	Experience with PAPA community	All Female; Latinx	Yes	5+	In-person	Groups	Education & Social Support	Embedded	Surveys

J Ambul Care Manage. Author manuscript; available in PMC 2021 January 01.

Reference Citation	Intervention		CHWs		PAPAs		CHW-PAPA Interaction(s)			Evaluation			
	Health Issue	Design/ Duration ^a	Title	Gender/ Ethnicity ^b	Background	Gender/ Ethnicity	Low- SES ^c ?	#	Mode	Context	Function to PAPAs	Design	Methods
Waitzkin, H., Getrich, C., Heying, S., Rodríguez, L., Pamar, A., Willging, C.,... & Santos, R. (2011). Promotoras as mental health practitioners in primary care: a multi-method study of an intervention to address contextual sources of depression. Journal of community health, 36(2), 316-331.	Mental Health	RCT; 12+ mo.	Promotora	Male & Female; Hispanic	Experience with PAPA community	Male & Female; Mostly Hispanic	No	5+	Phone & In-person	1-on-1	Education, Social Support, Healthcare coordination & Research/ Recruitment	Embedded	Interviews & Observing

J Ambul Care Manage. Author manuscript; available in PMC 2021 January 01.

- a). "Duration" of intervention refers to the length of PAPAs participation, and does not include planning, implementation, or (post-intervention) evaluation activities.
- b). "Gender/ Ethnicity" – Gender is given as either Male or Female, no further distinction was needed; Ethnicity is used collectively to mean Race or Ethnic identity, whichever was provided, i.e. Latinx and Hispanic are used here interchangeably, based on the actual language used by/in each reference. Additionally, all races or ethnicities were simply listed together and no Race-Ethnicity overlap was used, thus no distinction is made between non-Hispanic White/African American/etc. and Hispanic White/African American/etc..
- c). "Low SES?"- describes whether or not PAPAs with low-socioeconomic status were intentionally & *explicitly* targeted via the study/intervention setting or through recruitment/eligibility.
- d) RCT = Randomized, control trial.
- e) Neither Spc. = Neither specified; indicates here that neither Gender, nor Ethnicity were explicitly described in the reference.
- f) Not Spc. = Not Specified; indicates that the reference did not include any specific detail about the characteristic(s).
- g). "Varied" with regard to intervention design, refers to a collection of studies/interventions evaluated collectively in the corresponding reference article; these may have been RCT, pilot studies, quasi-experimental, etc.
- h). "Var." indicates that the number of CHW-PAPA interactions varied, either on an individual basis, by program/study group, or both.
- i) MSM = Men who have sex with men, described in article as "gay & bisexual men".
- j) Unspc.= unspecified, similar to Not/Neither Spc., indicated that characteristic was not described.
- k) CHW = Community Health Worker

TABLE 2

Analysis of Deep vs. Surface Articles: Dimensions of Depth found in Patient/Participant (PAPA) Feedback

DIMENSION	<i>Focus</i>	<i>Context</i>	<i>Meaning</i>	<i>Range</i>	<i>Voices</i>
DESCRIPTION	PAPA experience with CHWs is either explicitly stated as a key finding or a major portion of results.	Describes how, when, or where PAPA contact or experience with CHWs occurred.	Relates personal relevance or impact of interaction with CHWs, from PAPA perspective.	Reflects the presence of a spectrum of PAPA responses about CHW experiences.	Preserves detail and value via direct quotation of PAPA feedback, vs. summarization.
DEEP*	16/18 (89%)	18/18 (100%)	18/18 (100%)	12/18 (67%)	17/18 (94%)
SURFACE	1/19 (5%)	16/19 (84%)	9/19 (47%)	3/19 (16%)	8/19 (42%)
TOTAL	17/37 (46%)	34/37 (92%)	27/37 (73%)	15/37 (41%)	25/37 (68%)

*“Deep”= articles w/ depth score 4; numbers denote proportion of articles that exhibit (+ 1pt.) each dimension.

“Surface”= articles w/ depth score 3; numbers denote proportion of articles that exhibit (+ 1pt.) each dimension.