3

The quest for diffusible community health worker projects and the pitfalls of scaling

culture

6

7

8   Researchers of community health worker (CHW) models in many countries are looking for ways to scale without

9   losing one of their main advantages, their context-sensitivity. This paper looks at one research strategy to make

10   CHW projects scalable, namely by developing a generic notion of culture-sensitivity. Based on in-depth qualitative

11   analysis, we reconstruct how 'culture' has been enshrined in a US-based CHW project and specifically in the arte-

12   fact of a binder with teaching materials for vulnerable mothers. The inscription of generalized, culture-sensitive

13   spaces into the binder did allow the Project to comply with standards of evidence-based medicine while respecting

14   community self-determination and made space for creative and competent CHW practices. Yet at the same time, it

15   took away from more substantive conceptions of community engagement and from community empowerment

16   through CHWs. Our analysis highlights how the focus on culture can invisibilise and displace the importance of

17   competent CHW practice and processes of community engagement.

18   Keywords: Community health workers; scaling; evidence-based medicine; culture; community-engaged

19   research

20

21   Community health workers (CHWs) are important health service providers in resource-constrained

22   communities around the world (Ramirez-Valles 2003; Swartz and Colvin 2015; Torres et al. 2017). Made

23   prominent through the 1970s turn to Primary Health Care in international health institutions, CHWs de-

24   liver essential services in many low-and middle-income countries, but also in high-income countries such

25   as the United States. While their activities and working conditions vary across organizations and settings,

26   health scholars and practitioners agree that CHWs are important due to their proximity to underserved

27   communities, their credibility with those communities, and thus their anchoring in concrete socio-cultural

28   contexts (Rosenthal et al. 2014; Wallace, Farmer, and McCosker 2018). Still, while valuing this context-

29   sensitivity, researchers and policy makers also keep searching for evidence of 'what works' in CHW pro-

30   jects (World Health Organization 2018). Therefore, CHW proponents strive to develop models that can

31   be scaled and diffused across sites, in ways that both preserve their strength of being flexible and context

32   sensitive, and offer best practices for diffusion (Bradley 2018).

33   One site of search for best practices is the US, where CHWs are experiencing a veritable 'boom'

34   (Kangovi and Asch 2018) spurred by a surge of research on CHWs since the 1990s, networking among

35   CHW activists, and growing attention by policy makers (Torres et al. 2017). This culminated in the 2020

36   announcement of US President-elect Joe Biden to add 150,000 CHW jobs (Biden Harris Democrats 2021)

37   to the estimated 56,000 CHWs in the country (U. S. Bureau of Labor Statistics 2018). Community health

38   worker models appear promising to US policy makers as a comparatively low-cost workforce that can

39   address the growing concern with health inequity and the social determinants of health (Kangovi and Asch

40   2018). Yet, this does not mean that CHW models are clearly defined or firmly established. Activists,

41   scholars, and practitioners debate funding, organization, community ownership, and, importantly, the right

42   kind of evidence: What makes a good CHW intervention that should be scaled?

43   In this paper, we focus on pluralism and conflict between public health epistemologies as a major

44   challenge for the CHW movement. We conducted an in-depth qualitative study to explore how researchers

45   design a CHW intervention that satisfies competing epistemologies. As in other fields of health research

46   and interventions, e.g., debates about top-down or bottom-up design of complex interventions

47   (Greenhalgh and Papoutsi 2018; Hawe 2015, 311), researchers of CHW models are torn between different

48   epistemological conceptions of good research. They participate in the search for 'gold standard' evidence

49   in line with evidence-based medicine (EBM), while also respecting community knowledge and participa-

50   tion and thus the standards of community-engaged research (CEnR) (Rosenthal et al. 2014; Wiggins et al.

2009).[1] EBM norms favor the scaling of standardised interventions that have been tested in an RCT, CEnR norms demand the responsiveness of interventions and interveners to the researched communities, and ask for context sensitivity rather than standardisation (Haapanen and Christens 2021). Alignment with EBM matters as research funders or public health programs favor interventions that satisfy the epistemological demands of EBM (Parkhurst and Abeysinghe 2016). At the same time, public health research increasingly seeks to value community knowledge and thereby CEnR, in efforts to reverse hierarchies in research practice. Against this backdrop, our research project set out to explore how CHW projects manage to adhere to both EBM demands for standardized evidence and CEnR demands for contextual fit and asked: How can these two epistemologies be reconciled to design interventions that are transferable but also sensitive to concrete communities, respecting those communities' agency (see Logan 2019)? What can function as a scalable core of CHW models that finds support by both CEnR and EBM?

We studied an instance where a US-based maternal health project has proven productive in satisfying the needs of both EBM and CEnR, (from here on, 'the Project') to understand how health projects can navigate such epistemic pluralism. The effectiveness of the Project has been proven with an RCT just as it has been informed by community knowledge. The Project works with community health workers to support young mothers. The CHW intervention has been established by an academic centre in an indigenous US community (from here on, 'the Center'). Our in-depth qualitative analysis of the Project is informed by Science and Technology Studies (STS) and thus attentive to the role of material artefacts.

We found that the Project has designed 'boundary objects' that are valued by the epistemologies of EBM and CEnR. Boundary objects enable bridges and collaboration between different epistemologies as they are flexible enough to be interpreted and utilized differently (Star and Griesemer 1989a). Like many home-visiting CHW projects, this intervention rests on a core technology, a binder with teaching materials. Such binders structure programmes, the stages that the CHWs and their clients move through,

---

[1] We use community-engaged research (CEnR) as a generic term for community-based participatory research and participatory action research (see Baum 2016).

and the contents that should be delivered to the clients (e. g. Miller 2014). Our analysis established the binder of the Project as a boundary object that makes it possible to do research validated both by the epistemologies of EBM and CEnR. We find in our in-depth qualitative study that the binder's reference to culture makes it possible for the Project to be valued by both epistemologies. We show that the inscription of a generic notion of culture into the binder enabled its boundary work and the validation of the Project both by CEnR and EBM. Therewith, this article reconstructs one strategy to reconcile context-sensitivity and scalability in CHW projects with a generic notion of culture-sensitivity.

Culture is a contentious concept in the health sciences, since it is often used to designate 'Others' – non-white, non-middle-class groups whose behaviour is deemed irrational and therefore risky (DiGiacomo 1999; Fox, Thayer, and Wadhwa 2017; Jones 2011). In contrast, we show how the use of culture can instead be a strategy to navigate epistemic pluralism in public health. Still, we highlight the costs that come with such strategy of reconciling EBM and CEnR in the discussion. The generic notion of culture can invisibilise and displace the importance of competent CHW practice and processes of community engagement. This is not the only strategy to reconcile contexts and interventions. Others focus on iterative approaches, where bottom-up participatory design is followed by scaling and generalization and then possible recontextualization for novel fields (Greenhalgh and Papoutsi 2018; Kangovi et al. 2016). Complexity thinking reassesses the linear claims of RCTs and distinctions between core and variable dimensions of interventions (Greenhalgh and Papoutsi 2018; Hawe 2015). We discuss the analysed strategy of bridging medical epistemologies with boundary objects in the light of such alternative strategies.

In the remainder, first, we introduce the challenges of CHW programs to move between EBM and CEnR. The reconciliation of such distinct epistemologies is a concern beyond the analysed Project. Second, we present the methods, and third the results of our study. We highlight that reconciling CEnR and EBM with 'culture' rests on creative and pragmatic compromises from the viewpoint of both epistemologies. In the discussion, we explore to what extent making culture the bridge within such a compromise can have problematic implications.

Community-engaged research meets evidence-based medicine

Our study illustrates a strategy of linking influential epistemologies of medical research whose tensions and hierarchies are widely debated. On the one hand, CEnR consolidated during the last decades. Its adherents strive to conduct health research that involves and respects the communities that are researched, taking guidance from the norms of community-engaged approaches such as community-based participatory research (CBPR) (Haapanen and Christens 2021). According to CEnR epistemology, knowledge from affected communities is of similar value as knowledge produced by medically trained experts. Practitioners of CBPR and related methods such as participatory action research combine ideas from action research, Latin American liberation theory and the radical pedagogy of Paulo Freire, into community-engaged research practice (Loewenson et al. 2014). Its epistemology demands that researchers and community members interact in a deliberative manner while determining the goals and means of the research project (Baum 2016; Minkler and Wallerstein 2003). These epistemological norms are designed to overturn established power relations in medical research and induce transformational social change by including the researched individuals as co-researchers (Baum 2016).

CBPR's emphasis on community empowerment aligns with CHWs' self-understanding as agents of change instead of mere medical implementers (Wiggins et al. 2009). This self-understanding has been underlined through several nation-wide CHW professionalization initiatives stressing advocacy and community organizing as core CHW activities (C3 Project 2016; Rosenthal 1998). For these reasons, CBPR has been used to develop and refine CHW interventions in many Latin American and US settings (Wiggins et al. 2017). In the context of Native communities, where the Project originated, a range of institutions seek to guarantee community co-decision – also and importantly as a reaction to gross historical abuses of medical research in minority communities (NCAI 2012). Native community review boards oversee the research process and have the authority to set parameters for research foci and outputs (Brugge and Missaghian 2006; LaVeaux and Christopher 2009). Indigenous CBPR stresses community values and knowledge and recognizes tribal sovereignty and self-determination (Walters et al. 2020).

124   In parallel, since the 1990s, the epistemic standards of EBM have become authoritative for re-

125   searchers, practitioners and policy makers (Timmermans and Berg 2010). In the epistemology of EBM,

126   the most highly valued medical models are those whose impact on health indicators are supported with

127   RCTs (Wieten 2018). This so-called gold standard of EBM increasingly becomes guidance for policy

128   makers who seek to support health care models with a strong evidence base (Rodrigue and Reeves 2015).

129   Even though the quest for a 'controlled' research context and the hierarchical positing of EBM are con-

130   troversial (Parkhurst & Abeysinghe, 2016), health interventions that can be evaluated through RCTs have

131   an advantage when it comes to applying for research funding, given that many grant calls by funders such

132   as the NIH request conducting an RCT. A model supported by successful implementation of EBM proto-

133   col can also be sanctioned as a best practice model that can be scaled. For example, for CHW models on

134   child rearing, a model which aligns with the demands of EBM becomes eligible for federal US funding

135   schemes for infant and child health.

136   Tensions between both epistemologies have been widely debated, although the diversity in com-

137   munity-oriented approaches warrants against oversimplification (Haapanen and Christens 2021). Some

138   scholars regard CEnR as a method to adapt the results of EBM to communities (Katz et al. 2011), assuming

139   that all valuable medical knowledge must be supported by RCTs (Hawe 2015, 316). Others challenge such

140   an instrumental view of CEnR as 'being in the service' of EBM (Trickett 2011, 1353). CEnR, from this

141   viewpoint, should rather be about overcoming the hierarchies between academic knowledge produced

142   with EBM, and community knowledge (Haapanen and Christens 2021, 334–335). Scholars also describe

143   practical obstacles in combining EBM and CEnR in CHW research. RCTs' strict focus on measurable

144   outputs limits communities' ability to influence the research, and long-term and complex effects of CHW

145   services are difficult to capture through RCTs (Rosenthal et al. 2014, 241).

Methods and data

The analysed Project was selected as a case for in-depth qualitative examination as it managed to comply with the epistemologies of both CEnR and EBM. We studied the Project to understand strategies that make it possible to gain acceptance from such distinct epistemologies. The Project was designed in compliance with CBPR standards and closely collaborated with community boards to incorporate input from community members, for example, by recruiting mothers from the community as liaisons to the Native advisory boards. It also managed to receive grants from the NIH due to its evidence-based design. The project demonstrated positive effects on a broad set of behavioural health indicators for both mothers and children through RCTs and its rollout was therefore endorsed in federal funding schemes. The Project is considered a best practice within the field, with the potential to diffuse globally. In the analysis, we will show how the Project aligns with more general trajectories and scaling strategies within the CHW field, bridging demands from EBM and CEnR.

The paper draws on secondary and grey literature on the US CHW movement, publications and webinars of CHW associations and projects, and on semi-structured interviews with CHWs, CHW project leaders, and advocates from field visits to CHW projects in seven US states. We have interviewed 24 individuals about the broader politics of the CHW movement, and validation through research amidst competing epistemologies emerged as an important theme in these interviews. On the Project, we inter-viewed and gathered background information from ten individuals closely related with the Project and the Center. Here, we interviewed experts on administration of federal funds to utilize the binder; members of organizations utilizing the binder; employees conducting field research for the binder and a similar project; the project manager concerned with the binder at the Center; the current head of the Center, who is also the current principal investigator for research on the binder; the retired founder of the Center; and experts on CBPR in the context of the Project, focusing on its navigation of EBM and CEnR. We have changed the names of the protagonists and their institution. We reviewed all the academic articles published on the

170 binder, newspaper articles, an organizational history of the Center, and a PhD thesis on the binder. The

171 transcripts have been edited to aid their readability.

172 *Analysis*

173 Our interpretation is based on a close reading of the analysed material and interview transcripts.

174 In accordance with our research question, our interpretation of the material explored the theme of how

175 both epistemologies feature in the work and self-representation of actors engaged with the Project. Our

176 interpretive focus builds on perspectives and concepts from science and technology studies (STS). STS

177 scholarship has been concerned with epistemology as the social practice of knowledge production, the

178 role of material artefacts in the socio-academic coproduction of research, and analyses the social inscrip-

179 tions and roles of these artefacts (Shaffer 2021). Such a focus has been adopted by public health research

180 that explores the productive role of artefacts such as leaflets for research projects (Loblay et al. 2020).

181 Taking from the conceptual toolbox of STS, we explored while analysing our material how materially

182 sedimented boundary objects enable work between both epistemologies (Star and Griesemer 1989b).

183 Boundary objects contain the flexibility to enable collaboration between different epistemic communities

184 without a consensus between these communities (Clarke and Star 2008). We examined to what extent the

185 binder can be interpreted as a materially sedimented boundary object that achieved agreement from the

186 epistemologies of EBM and CEnR.

187 ## Results: Culture as medicine

188 In many respects, the Project achieved the best in terms of CEnR and EBM, with a community-

189 based intervention design and a standardized effectiveness test allowing scaling of the intervention. We

190 found that the culture-sensitive binder served as a bridge between EBM and CEnR. In the Project, the

191 binder is designed to be physically placed between the CHW and the young mother, showing teaching

192 material to the CHW and illustrative contents to the mother. The Project utilizes several binders for dif-

193 ferent modules. The CHW proceeds from one module to the other, carrying the latest module to her visits.

194 The binder was designed over several decades, initially developed in a Native American community. It

195 has been endorsed by the Indian Health Services and exported to non-Native settings as well. Currently,

196 the binder is utilized by dozens of organizations across the US and preparing to be diffused internationally.

197 It plays an important role in the diffusion of the Project: The Center sends boxes with the binder to CHW

198 programs who apply the Project. A closer look at the binder's validation reveals, though, that the alignment

199 with both branches of medical research comes at a cost: The binder has not incorporated specific cultural

200 practices or context elements as core to the intervention,[2] nor validated CHWs' impact on health outcomes.

201 *Negotiating the meaning of culture*

202 How did the binder manage to be validated both by EBM and CEnR? Our study shows that the

203 inscription of 'culture' into the binder enabled its acceptance in terms of both epistemologies: The culture-

204 sensitive binder served as a bridge between EBM and CEnR. The Project started from an approach to

205 culture mobilized in the field of behavioural health, for example, anti-addiction programmes. It states that

206 culture can be a positive resource for healthy behaviours since the stability and sense of identity enshrined

207 in communities and shared traditions can fend off destabilizing forces at play in modern societies. In line

208 with CEnR, the focus of the Project is on mobilizing or restoring inherited cultural practices that can

209 empower and enhance health, for example traditional parenting practices, forms of physical activity, and

210 healthy traditional foods (Trainer A, cited in a report on the project).

211 The focus on traditions with a potential to enhance health resonates not only with discussions in

212 social epidemiology about resiliency-enhancing and protective features of culture, for example, where

213 family orientation may protect individuals against risky behaviours (Castro, Barrera, and Martinez 2004).

214 It also aligns with the philosophical underpinnings of CBPR and its Freirian popular education roots.

215 According to CBPR, community members are the foremost experts on the challenges they face and on the

216 resources that they have to address these challenges. CEnR entails the promise to 'disrupt traditional

---

[2] See Hawe on the intricacies of defining core versus variable elements of interventions (Hawe 2015).

hierarchies built around academic and expert knowledge' by bringing community knowledge into dialogue with academic research (c.f. above) The binder makes space for tapping these resources by designating placeholder spaces in the teaching session – blank sections in the curriculum where programs and CHWs can bring in cultural lessons – to support cultural reflection and thus creative CHW practice.

At the same time, the Project referenced culture in a manner that enabled acceptance by EBM. Initially, to make such practices part of a scalable intervention in line with EBM, the Project strived to name and measure them. Yet, this turned out to be difficult. A researcher of the Project explained to us the challenge of defining 'cultural lessons' in a manner that is compatible with the demands of both EBM and CEnR:

> Researcher: In the very earliest days, we tried to have lessons about the local culture. And then the elders in the community said: 'You don't write that stuff down, but you leave places for it in the curriculum'. So basically, there are prompts in the curriculum that say, if your community has traditions around the birth of a baby, this would be a good time to talk about that. Or if your community has certain things that you do, certain beliefs about breast-feeding, this would be a good time to talk about them. Because when we wrote them down, they were never exactly right. It's like an oral heritage and people wouldn't say it in English the same way and it just got kind of …. I think when they read it on paper it looked awkward compared to just letting this be part of the relationship-building and say it in your own language.

The Project thus sought to refrain from fixing the meaning of living cultures. But additionally, it had to take into account the diversity of culture, as the Researcher also stressed:

> Researcher: So now the Project got sort of proven in communities in [name of a region](…) but when it started, we got a lot of demand to scale it to different areas that have different languages, different cultures. And basically, what we then did was [that] we had sort of a template to say 'Here are all the places in the curriculum where these cultural inputs are, there is space for your cultural inputs'. And some communities actually create their own 'co-guide' for that whereas others just use the prompts to do it. (…)
>
> Interviewer: Very interesting. Is it right to say that you got these blank spots for everything which is not directly medical?
>
> Researcher: Yes, exactly. It is nothing that we consider the core elements or anything that related to our outcomes. But maybe these other things enhance engagement. We know the relationship between the [CHW] and the mom is really important for engagement and retention. So, these things are really

248   important for that. And then we also, from a lot of other work we have done, know that strong cultural

249   identity is associated with less substance use, more resilience, better mental health. So, all these things

250   might be having secondary effects on the long-term health of the families. Never ever may we be able

251   to measure that (…). (Interview researcher)

252   The curriculum of the binder thus tried to facilitate enactments of culture, but in a way that respects

253 the fact that subgroups vary. For the Project, uniform descriptions of cultures by outsiders do not do justice

254 to these communities, thus adhering to CEnR norms (see NCAI 2012). Yet at the same time, the high

255 value that EBM places on measurable and standardisable interventions meant that cultural practice could

256 not become a 'core element[s]' (see above). Rather, it became necessary to work with templates and

257 prompts for culture to inscribe cultural knowledge into the binder. 'Never ever' can the importance of

258 cultural knowledge be measured and be validated by EBM. The inscription of a generic notion of made it

259 possible to do both: Value community knowledge in line with CeNR and ensure validation of the binder

260 by EBM.

261   The result is that the interpretation of culture is left to the CHW and her clients while utilizing the

262 binder and encountering the gaps in the curriculum. As a consequence, does the Project confer it to the

263 agency of CHWs to tap the value of culture? Does CeNR trump EBM as community knowledge is core

264 to the Project?

265 ***Community health workers – cultural agents?***

266 During the research process, the Center worked with Native CHWs to recruit personnel they considered

267 trusted members of the community. They are the workforce whose agency fills in the blank spot for 'cul-

268 ture' left in the Project design. According to a trainer:

269   So the para-professionals, we really capitalize on the strength of them. So they know the culture, of-

270   tentimes they're from the community. They're very familiar with the local resources. They're very

271   familiar with who to contact in local community partners. They can relate to what our families are

272   going through, oftentimes they've been through it themselves. A lot of our families may already know

273   them and may already feel comfortable with them. Para-professionals also eliminate the cultural and

274   language barriers that may exist for non-Native home visitors. So they're at the very core of our pro-
275   gram. (Trainer A, cited in a report on the project)

276   Hence, the cultural competences of CHWs feature prominently in the Project philosophy. Yet,

277   aligning this philosophy with EBM led to a rather limited role for CHW agency. In designing the RCTs,

278   the Center did not prove the effectiveness of CHWs per se. In the trials, the treatment group consisted of

279   CHWs using the binder, whereas the control group consisted of CHWs without a binder. The difference

280   that CHWs make has not been subject to evaluation, only the difference that the binder makes for CHW

281   practice, an instance of silencing relational labour also observed in other behavioural health interventions

282   (Wolters et al. 2020). The individual professional contribution of CHWs was thus not validated in the

283   intervention study, so that in the trial the object – the binder – and not the subject – the CHW – constitutes

284   the intervention.

285   Bracketing CHW agency has been the price of fidelity and protocol adherence that is needed to

286   perform RCTs (Mehta et al. 2019; Rosenthal et al. 2014). Had CHWs used the curriculum too flexibly,

287   trial results might have been meaningless as they could have lacked internal validity. This was exactly

288   what had happened in the first trial, as CHWs had deviated from the binder. To attain robust results, the

289   Center subsequently made sure that protocol was followed. The Center conducted extensive trainings on

290   protocol adherence, tested the CHWs' knowledge for the faithful delivery of the intervention and engaged

291   in regular supervision and phonographic recording of all sessions. Certainly, as we have shown in the

292   previous section, protocol adherence also means filling the spaces left for enacting cultural strengths. Yet,

293   given that these blank spots are not spelled out in the binder, and neither is the agency of CHWs subject

294   to the trial, the Project's core and scaled component are the standardized teaching materials. Cultural

295   competency remains an assumed background condition.

Discussion and conclusion

This paper discussed the quest for scalable CHW interventions in the light of epistemological pluralism. We analysed the construction of a binder with lessons for young mothers, to be taught by CHWs, and how it reconciled CEnR and EBM norms. We demonstrated how this binder references cultural competences of CHWs and showed that using culture as a bridge between EBM and CEnR draws attention to strengths of communities and CHWs. Still, the need to measure and standardise scalable elements meant that the binder referenced culture only as a placeholder for assumed interactions. While CHWs' cultural competences were assumed through these placeholders, the CHWs' contribution to the Project's success was not evaluated. In the discussion, we focus on the consequences of this cultural interpretation of CHWs' agency for the broader CHW movement.

While this is only one project with its unique history and contribution in public health, it does give reason to suspect that counting on culture – be it cultural fit, cultural traditions, or strengths – is not sufficient to harness the promise of CHW models and of CEnR approaches to act on the social determinants of health and work towards health equity (see Torres et al. 2017). Many CHW advocates, not only in the US, are sceptical of a medicalization of CHW's work, fearing that their integration into standardised medical (if not disease-specific) interventions curtails CHWs' ability to engage in advocacy and broader socio-medical work (Druetz, Ridde, and Haddad 2015; Nading 2013). Invocation of culture does recognize non-biomedical aspects of CHW work, and can broker consent from EBM and CEnR. For example, a focus on culture makes the binder agreeable for funding organizations that value RCTs just as for community review boards. Yet, the emphasis on culture might detract from other valued traits of CHWs such as advocating for social change and identifying structural barriers to good health (c. f. Malcarney et al. 2017; Warr, Mann, and Kelaher 2013). It circumscribes CHWs as carriers of cultural identities, while the community CHWs act for and with is often a community of experience and practice and not a linguistic or ethnic community. As recently stressed by a national community health worker leader, CHWs act 'based

320 on the need, the shared close experience of individuals, and oftentimes that crosses culture and ethnicity'

321 (GHSM Proseminar 11, 24'11''-26'10'').

322   Probing and validating a fuller set of CHW practice in a way that both recognizes community

323 ownership and thus CEnR, and the need for standardized evaluation and thus EBM, will require linkages

324 beyond the generic notion of culture. We have shown that such linkages are usually compromises with

325 mediating boundary objects allowing some ambiguity. Such compromises broker consent both from re-

326 searchers who aim for alignment with RCTs just as from community representatives. Still, a more direct

327 operationalization of community engagement practices and CHW activities, developed in collaboration

328 with CHWs (see Rodela et al. 2021), promises to probe and diffuse a more comprehensive set of CHW

329 contributions to public health.

330   Finally, as a strategy to design interventions that matter across sites while remaining flexible for

331 situational adjustments, boundary objects address similar sensitivities as complex interventions (Hawe

332 2015). With boundary objects, the compromises and negotiations demanded by such an intervention are

333 neatly packed into the standardized object, allowing for evaluation with RCTs. On the other hand, the

334 inscription of complexity into the object means silencing the challenges of designing a complex interven-

335 tion. Diffused as fixed intervention elements, the compromises between RCTs and CEnR are no longer

336 visible and adaptation is no longer part of the intervention design. In contrast, a complex intervention

337 problematizes the need for continuous readaptation. As long as RCTs are highly valued, public health

338 interventions will face such trade-offs when incorporating contextual elements.

339 **References**

340   Baum, Frances E. 2016. "Power and Glory: Applying Participatory Action Research in Public

341 Health." SciELO Public Health.

342   Biden Harris Democrats. 2021. "The Biden Plan for Mobilizing American Talent and Heart to

343 Create a 21st Century Caregiving and Education Workforce." https://joebiden.com/caregiving/.

344   Bradley, Elizabeth H. 2018. "Community Health Workers Are Effective but How to Scale-Up?"

345   *American Journal of Public Health* 108 (9): 1129–1130.

346   Brugge, Doug, and Mariam Missaghian. 2006. "Protecting the Navajo People through Tribal

347   Regulation of Research." *Science and Engineering Ethics* 12 (3): 491–507.

348   C3 Project. 2016. "The Community Health Worker Core Consensus (C3) Project: 2016 Recom-

349   mendations on CHW Roles, Skills, and Qualities." https://sph.uth.edu/dotAsset/55d79410-46d3-4988-

350   a0c2-94876da1e08d.pdf#page=1&zoom=auto,-73,798.

351   Castro, Felipe González, Manuel Barrera, and Charles R. Martinez. 2004. "The Cultural Adapta-

352   tion of Prevention Interventions: Resolving Tensions between Fidelity and Fit." *Prevention Science* 5

353   (1): 41–45.

354   Clarke, Adele E., and Susan Leigh Star. 2008. "The Social Worlds Framework: A Theory/Meth-

355   ods Package." In *The Handbook of Science and Technology Studies*, edited by Edward J. Hackett, Olga

356   Amsterdamska, Michael Lynch, and Judy Wajcman, 113–138. MIT press.

357   DiGiacomo, Susan M. 1999. "Can There Be a 'Cultural Epidemiology'?" *Medical Anthropology*

358   *Quarterly* 13 (4): 436–457.

359   Druetz, Thomas, Valéry Ridde, and Slim Haddad. 2015. "The Divergence between Community

360   Case Management of Malaria and Renewed Calls for Primary Healthcare." *Critical Public Health* 25

361   (2): 165–177.

362   Fox, Molly, Zaneta Thayer, and Pathik D. Wadhwa. 2017. "Assessment of Acculturation in Mi-

363   nority Health Research." *Social Science & Medicine* 176 (January): 123–132.

364   GHSM Proseminar 11. "Dr. Daniel Palazuelos and Ms. Denise Octavia Smith."

365   https://www.youtube.com/watch?v=SzcBtSHUrMw&t=1611s.

366   Greenhalgh, Trisha, and Chrysanthi Papoutsi. 2018. "Studying Complexity in Health Services

367   Research: Desperately Seeking an Overdue Paradigm Shift." Springer.

368   Haapanen, Krista A., and Brian D. Christens. 2021. "Community-engaged Research Approaches:

369   Multiple Pathways To Health Equity." *American Journal of Community Psychology* 67 (3–4): 331–337.

370   Hawe, Penelope. 2015. "Lessons from Complex Interventions to Improve Health." *Annual Re-*

371   *view of Public Health* 36 (January): 307–323.

372   Jones, Jared. 2011. "Ebola, Emerging: The Limitations of Culturalist Discourses in Epidemiol-*

373   ogy." *The Columbia Journal of Global Health* 1 (1): 1–6.

374   Kangovi, Shreya, and David A. Asch. 2018. "The Community Health Worker Boom." *NEJM*

375   *Catalyst*, no. August 29 (January). https://catalyst.nejm.org/community-health-workers-

376   boom/?utm_source=PFW_Cat&utm_medium=email_org&utm_content=Kangovi01&utm_cam-

377   paign=PFWEmail&query=pfw&jwd=000020107645&jspc=IM&fbclid=IwAR0Mcnn6aPLnbxotiuM-

378   MANAk_PP7BUpIEdJwsCOUpTB4c8_MvuU4ZcKPVJs.

379   Kangovi, Shreya, Tamala Carter, Dorothy Charles, Robyn A. Smith, Karen Glanz, Judith A.

380   Long, and David Grande. 2016. "Toward A Scalable, Patient-Centered Community Health Worker

381   Model: Adapting the IMPaCT Intervention for Use in the Outpatient Setting." *Population Health Man-*

382   *agement* 19 (6): 380–388. doi:10.1089/pop.2015.0157.

383   Katz, David L., Mary Murimi, Anjelica Gonzalez, Valentine Njike, and Lawrence W. Green.

384   2011. "From Controlled Trial to Community Adoption: The Multisite Translational Community Trial."

385   *American Journal of Public Health* 101 (8): 17–27.

386   LaVeaux, Deborah, and Suzanne Christopher. 2009. "Contextualizing CBPR: Key Principles of

387   CBPR Meet the Indigenous Research Context." *Pimatisiwin* 7 (1): 1.

388   Loblay, Victoria, Kathleen P. Conte, Sisse Grøn, Amanda Green, Christine Innes-Hughes, Lina

Persson, Mandy Williams, and Penelope Hawe. 2020. "'Old' Tools in a New Era: Unpacking the Roles of Promotional and Informational Resources in Scaled-up Preventive Interventions." *Critical Public Health*, January, 1–12.

Loewenson, Rene, Asa C. Laurell, Christer Hogstedt, Lucia D'Ambruoso, and Zubin Shroff, eds. 2014. *Participatory Action Research in Health Systems: A Methods Reader*. Harare: TARSC, AHPSR, WHO, IDRC Canada, Equinet.

Logan, Ryan I. 2019. "Being a Community Health Worker Means Advocating: Participation, Perceptions, and Challenges in Advocacy." *Anthropology in Action* 26 (2): 9–18.

Malcarney, Mary-Beth, Patricia Pittman, Leo Quigley, Katherine Horton, and Naomi Seiler. 2017. "The Changing Roles of Community Health Workers." *Health Services Research* 52 Suppl 1 (January): 360–382. doi:10.1111/1475-6773.12657.

Mehta, Tara G., Davielle Lakind, Dana Rusch, Angela L. Walden, Grace Cua, and Marc S. Atkins. 2019. "Collaboration with Urban Community Stakeholders: Refining Paraprofessional-Led Services to Promote Positive Parenting." *American Journal of Community Psychology* 63 (3–4): 444–458.

Miller, Wayne C. 2014. "Evaluation of a Community Health Worker Training Program in Rural Appalachia, USA." *International Journal of Medicine* 3 (1): 33. doi:10.14419/ijm.v3i1.4508.

Minkler, Meredith, and Nina Wallerstein, eds. 2003. *Community Based Participatory Research for Health*. San Francisco, CA: Jossey-Bass.

Nading. 2013. "'Love Isn't There in Your Stomach': A Moral Economy of Medical Citizenship among Nicaraguan Community Health Workers." *Medical Anthropology Quarterly* 27 (1). Med Anthropol Q. doi:10.1111/maq.12017.

NCAI. 2012. "Walk Softly and Listen Carefully: Building Research Relationships with Tribal Communities." NCAI Policy Research Center and MSU Center for Native Health Partnerships.

412   Parkhurst, Justin O., and Sudeepa Abeysinghe. 2016. "What Constitutes 'Good' Evidence for

413   Public Health and Social Policy-Making? From Hierarchies to Appropriateness." *Social Epistemology*

414   30 (5–6). Routledge: 665–679. doi:10.1080/02691728.2016.1172365.

415   Ramirez-Valles, Jesus. 2003. "Translocal and Gender Dimensions of Frame Alignment: Commu-

416   nity Mobilization and Recruitment Processes among Women Community Health Workers in Mexico."

417   *Critical Public Health* 13 (3): 207–230.

418   Rodela, Keara, Noelle Wiggins, Kenneth Maes, Teresa Campos-Dominguez, Victoria Adewumi,

419   Pennie Jewell, and Susan Mayfield-Johnson. 2021. "The Community Health Worker (CHW) Common

420   Indicators Project: Engaging CHWs in Measurement to Sustain the Profession." *Frontiers in Public*

421   *Health* 9 (January): 741.

422   Rodrigue, Edward, and Richard V. Reeves. 2015. "Home Visiting Programs: An Early Test for

423   the 114th Congress." Brookings Institute, Social Mobility Papers. https://www.brookings.edu/re-

424   search/home-visiting-programs-an-early-test-for-the-114th-congress/.

425   Rosenthal, E. Lee. 1998. *A Summary of the National Community Health Advisor Study*.

426   https://crh.arizona.edu/sites/default/files/pdf/publications/CAHsummaryALL.pdf.

427   Rosenthal, E. Lee, Hector G. Balcazar, Hendrik Heer, Sherrie Wise, Leticia Flores, and Melissa

428   Aguirre. 2014. "Critical Reflections on the Role of CBPR Within an RCT Community Health Worker

429   Prevention Intervention." *Journal of Ambulatory Care Management* 37 (3): 241–249.

430   Schwartz-Shea, Peregrine, and Dvora Yanow. 2013. *Interpretive Research Design: Concepts and*

431   *Processes*. Routledge.

432   Shaffer, Jonathan D. 2021. "Knowledge, Boundaries, and Bodies: Social Construction between

433   Medical Sociology and Science and Technology Studies." *Sociology Compass* 15 (10): 12924.

434   Star, Susan Leigh, and James R. Griesemer. 1989a. "Institutional Ecology,Translations' and

Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-

39." *Social Studies of Science* 19 (3): 387–420.

Star, Susan Leigh, and James R. Griesemer. 1989b. "Institutional Ecology ,Translations' and

Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-

39." *Social Studies of Science* 19 (3): 387–420.

Swartz, Alison, and Christopher J. Colvin. 2015. "'It's in Our Veins': Caring Natures and Mate-

rial Motivations of Community Health Workers in Contexts of Economic Marginalisation." *Critical

Public Health* 25 (2): 139–152.

Timmermans, Stefan, and Marc Berg. 2010. *The Gold Standard: The Challenge of Evidence-

Based Medicine and Standardization in Health Care*. Temple University Press.

Torres, Sara, Héctor Balcázar, Lee E. Rosenthal, Ronald Labonté, Durrell Fox, and Yvonne

Chiu. 2017. "Community Health Workers in Canada and the US: Working from the Margins to Address

Health Equity." *Critical Public Health* 27 (5): 533–540.

Trickett, Edison J. 2011. "Community-Based Participatory Research as Worldview or Instrumen-

tal Strategy: Is It Lost in Translation (al) Research?" American Public Health Association.

U. S. Bureau of Labor Statistics. 2018. "Occupational Employment and Wages, May 2018."

https://www.bls.gov/oes/2018/may/oes211094.htm#nat.

Wallace, Carolyn, Jane Farmer, and Anthony McCosker. 2018. "Community Boundary Spanners

as an Addition to the Health Workforce to Reach Marginalised People: A Scoping Review of the Litera-

ture." *Human Resources for Health* 16 (1): 1–13.

Walters, Karina L., Michelle Johnson-Jennings, Sandra Stroud, Stacy Rasmus, Billy Charles,

Simeon John, James Allen, Joseph Keaweʻaimoku Kaholokula, Mele A. Look, and Māpuana Silva.

2020. "Growing from Our Roots: Strategies for Developing Culturally Grounded Health Promotion

458   Interventions in American Indian, Alaska Native, and Native Hawaiian Communities." *Prevention Sci-*

459   *ence* 21 (1): 54–64.

460   Warr, Deborah J., Rosemary Mann, and Margaret Kelaher. 2013. "'A Lot of the Things We

461   Do… People Wouldn't Recognise as Health Promotion': Addressing Health Inequalities in Settings of

462   Neighbourhood Disadvantage." *Critical Public Health* 23 (1): 95–109.

463   Wieten, Sarah. 2018. "Expertise in Evidence-Based Medicine: A Tale of Three Models." *Philos-*

464   *ophy, Ethics, and Humanities in Medicine : PEHM* 13 (1): 2. doi:10.1186/s13010-018-0055-2.

465   Wiggins, Noelle, Laura Chanchien Parajón, Chris M. Coombe, Aileen Alfonso Dulduloa, Leticia

466   Rodriguez Garcia, and pei-Ru Wang. 2017. "Participatory Evaluation as a Process of Empowerment:

467   Experiences With Community Health Workers in the United States and Latin America." In *Community-*

468   *Based Participatory Research for Health*, edited by Nina Wallerstein, Bonnie Duran, John Oetzel, and

469   Meredith Minkler, 3rd ed. San Francisco, CA: Jossey-Bass.

470   Wiggins, Noelle, Denise Johnson, María Avila, Stephanie A. Farquhar, Yvonne L. Michael, Te-

471   resa Rios, and Alicia Lopez. 2009. "Using Popular Education for Community Empowerment: Perspec-

472   tives of Community Health Workers in the Poder Es Salud/Power for Health Program." *Critical Public*

473   *Health* 19 (1): 11–22.

474   Wolters, Anna, Guido Wert, Onno C. P. van Schayck, and Klasien Horstman. 2020. "Invisible

475   Work, Actors, and Knowledge: An Analysis of a Clinical Trial for a Vaccine to Stop Smoking." *BioSo-*

476   *cieties* 15 (1): 1–27.

477   World Health Organization. 2018. *WHO Guideline on Health Policy and System Support to Op-*

478   *timize Community Health Worker Programmes*. Geneva.

479