

Modelling Community Participatory Systems to Improve Health Care interventions for Adolescents in Latin America

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Abstract

Background

Community participation is a systematic process where a group of people unites with the intention to solve a common problem. Although it is not new, every project adopts their own vision of participation which could impact differently to the outcomes of the project and may not lead to improve their original situation. The goal of this study was to model the interrelationship of Participatory Action Research (PAR) with the improvement of health that adds up to Community Development (CD) and describe the implementation in recent projects in Latin America.

Methods

The approach of this research is qualitative and intends to construct a framework that displays the relationship between PAR-CD to later assess the implementation of seven Latin American projects. Group Model Building (GMB) and document assessment were used as methods.

Results

A dynamic system model is presented. The target variable is CD while control variables are the situation analysis, stakeholders, policy, bidirectional contribution, context-based for cultural-social-ethical, evidence-based and availability of resources. In the document assessment some missing elements were identified like dynamics of time, evidence base, cost-effectiveness, availability of resources, feasibility, replicability, sustainability, and scalability.

Conclusions

This research demonstrates that success of PAR-CD depends on a complex and dynamic system that contains causal loops and control factors. It also evidences the gap between an ideal model and what is implemented of PAR-CD giving opportunities for improvement.

Trial registration:

Permission to conduct this study was granted by a research ethics committee at Colegio Medico de Cochabamba, Bolivia.

Background

Community participation is a systematic process where a group of people unites with the intention to solve a common problem (1–3). In the context of Sustainable Development Goals (SDG), participation of the community is of key importance to advance in rights, tackle some of the health determinants and to improve the provision and utilization of health services (3, 4). Therefore, most of these actions assume that when there is community participation, the project will automatically have support, be sustainable in time and will improve the health of the population. Moreover, the project that involves participation will achieve peoples' empowerment with skills and improved behavior. However, Rifkin (5) has proved in his paper that many of these projects were just presenting participation advocacy instead of presenting evidence of what worked to reach improvement and what the main variables or processes are that could lead from community participation to health improvement (3). Although community participation is not new, every project adopts their own vision of participation which could impact differently to the outcomes of the project and may not lead to improve their original situation (6–8).

Accordingly, the question remains what type of community participation works to reach health improvement that can add up to development? In this study, community participation is understood as a group of people that will carry out a project in their community for a period of time, guided and motivated externally by an organization that has a funded project to improve their health; therefore, with a Participatory Action Research (PAR) (2, 3, 9). The goal of this study was to model the interrelationship of Participatory Action Research (PAR) with the improvement of health that adds up to Community Development (CD) and describe the extend of implementation in recent PAR-CD projects in Latin America. This was going to be done in two parts. First, constructing a system dynamic model that displays the ideal relation between PAR-CD. Second, assessing the level of PAR used in Latin American projects to achieve health improvement according to the constructed model. The results enhance the evidence of the relation between community participation and development to be used by project managers, implementers, project funders, and policy makers.

Methods

The approach of this research is qualitative and intends to construct a framework that displays the relationship between Participatory Action Research (PAR) and CD to assess the level of PAR used in Latin American projects to achieve health improvement. For the first objective, a system dynamics approach was used based on a consensus method named Group Model Building (GMB). GMB is part of systems thinking and is based on group discussion-sessions that help developing a system dynamics model that shows causal-relations and feedback loop

diagrams (10, 11). This method reunites different stakeholders with different visions and experience in projects with PAR aiming to promote consensus in the interrelationship between the PAR-CD elements, its potential to be replicated, scale-up and sustained over time, advancing in social innovation and capacity building trying to have comparable outcomes in every project that is community embedded. In this study, the GMB consisted in three structured sessions of two hours each with stakeholders (project coordinators, data collectors, community trainers and health personnel, n = 13) from five countries (Bolivia, Ecuador, Nicaragua, Cuba and Venezuela) and were assisted by a facilitator modeler. They distinguished the system components of the PAR (needs assessment, planning, implementation, monitoring and evaluation) and the causal relation between PAR and CD.

The discussion sessions were done online using Zoom video communications and the system dynamics model was sketched with Vensim simulation software. The construction and final PAR-CD model was validated by the participants in three discussion sessions based on their experience and available evidence, this means, that the discussions allowed eliciting of scientific evidence that was included in the description. Throughout the sessions, all participants reached a shared understanding of PAR-CD. In the case of Venezuela and Cuba, it was not possible to have them join the discussions due to internet constraints; instead, an interview was carried out by WhatsApp and the information was later included in the model and validated by all participants.

For the second objective, a document assessment of seven projects implemented in five different Latin American countries to measure the level of community participation based on the PAR-CD systems dynamic model developed by GMB. An invitation was sent among a Latin American network of health professionals to send project protocols and other methods documents to be reviewed for community participation. The criteria for inclusion were based on funded research projects that included community participation for adolescents with the aim of improving their health. Mainly grey literature was assessed (reports and project documents) as there was little or no scientific publications on these interventions.

Both sources explain the relationship between PAR and CD or health improvement. Permission to conduct this study was granted by a research ethics committee at Colegio Medico de Cochabamba, Bolivia. Informed consent was formally requested to all informants before the discussion sessions of GMB.

Results

With the results of the group discussion sessions a general model was constructed that shows the relation of PAR and CD (Fig. 1). Figure 1 shows the causal relations, feedback loops, control, and target variables for the PAR-CD relation. For example, if you have a good quality of planning and implementation, there will be a higher involvement of the community. Figure 1 demonstrates that the success of PAR-CD depends on *control variables (critical factors)* such as policy, community knowledge, context based for cultural-social, ethical, available resources, definition of the outcome indicators, common goals, and diversity of stakeholders. These components can be influenced and considered in the design of the project.

Source: GMB sessions

Table 1 displays the detailed results of the document assessment compared with the system dynamic model PAR-CD. The numbers reflect the gaps in each phase (1 bad or non-addressed, 2 addressed very basic, 3 fully addressed). Principles of existence does quite well with an average value of 2.46 and a standard deviation of 0.84 shows a reasonable parity between the model and what was implemented. Table 1 shows that the three phases of a project that should include participation of a diversity of stakeholders have an average of 1.70 and the standard deviation of 0.90 reflecting a high discrepancy of what was implemented or considered in the project and the GMB model. Some missing elements that highlight these gaps in the documents are dynamics of time, evidence base, cost-effectiveness, availability of resources, feasibility, replicability, sustainability, and scalability.

Table 1. Document assessment of seven case-studies for measuring the level of community participation

Note

The projects were assessed in a Likert scale going from 1 to 3. Being 1 bad or non-addressed, 2 being addressed very basic, 3 fully addressed.

Source: Own elaboration based on project documents assessment

Principles of existence

GMB sessions highlighted these principles as not all projects involve a participatory process. These guide the entire project, gain accountability and a stronger participation (table 1). Principles of empowerment, knowledge transfer, equity, sustainability, leadership, and Country's policy (1, 7, 12) guide a project. Moreover, a diversity of significant actors of the community or stakeholders need to participate for accountability,

including local authorities (municipality, health, education), community leaders, medical practitioners, organizations and local business members and others. And this provides a wider vision of the project process (12–15). Document assessment showed that few included a diversity of stakeholders, the rest included the target population only.

Theory of change (ToC) or improved behavior is a key part of promotion and prevention projects regarding health (14, 16, 17) and leads to CD. However, project document revision showed that most of the projects did not have an explicit ToC although the community movement clearly intended to improve health for adolescents.

Needs Assessment

The discussion group mentioned that a situation analysis (quantitative and qualitative approach) of the community is important to know the problems, the protective factors, and its long-term plans. Some Latin American countries do not have accessible or detailed enough statistics to observe these aspects; therefore, a longitudinal cross-sectional survey is important to assess this (1, 2). The participation of a trained facilitator is key to bringing the different stakeholders from the community together (2, 18) engaging them under the premises of a common goal, leadership, and authority endorsement (2, 18).

An important feedback loop is the dynamics of time for involving different actors (12–15): 1) *present*, the process needs to be adapted to the current external factors (PESTEL) and address the existing crucial threats, 2) *projection*, the furthest away in time the problem is, the more difficult it is to imagine a threat; hence, more complicated to engage the population today, 3) *uncertainty*, it is difficult to imagine the consequences of a non-take action now when the consequences are only visible in a few number of persons or in the future generation. These three characteristics play a strong role in the process of decision-making. It is also important to consider the cognitive bias for engaging or not in the community actions. For instance, *positivism* is the idea that “the problem will not reach me”, the *bystander* “it is better that someone else works for the solution”, or *fixating* “staying in the same situation is easier” (19).

Project document revision showed that needs assessment was mainly based on simple statistics (basic) while others were based on a cross-sectional survey that later was used to evaluate the change (t0 and t1). None of the projects elicited dynamics of time. And some did not include a diversity of stakeholders for the need’s assessment (table 1).

Planning and Implementation

The discussion group mentioned that planning is an important phase to list the interventions. This because communities may not be pleased with activities that do not fit their socio-cultural acceptance or are ineffective for their context. Hence, it was suggested to work thinking “with the community, from the community and for the community” in order to improve health and development (20). The project can include a bidirectional contribution where the community can inform about their natural practices and science can inform on better ways to do (theory informing practice -evidence based, and practice informing theory -experimental practice). This twofold approach is valuable for lessening the limitations of the implementation plan.

Planning has five inputs: 1) the report of the needs’ assessment that includes a robust ToC and goals tailored for this report, 2) bidirectional contribution that includes community knowledge, 3) activities that are contextualized for cultural-social and ethical that supports *validation*, 4) evidence based that supports *effectiveness*, 5) available resources. The facilitator can extract in the group discussion a common vision of the problem, the explicit and implicit knowledge, values, fears, social cohesion or conflicts, perspectives, financial power, etc.

The group agreed that activities of intervention should consequently be, preferable, evidence-based and work in connection with the objectives. This means, that the activities need to be controlled by their contribution to the desired outcome (ToC) in a reliable way. In addition, it was mentioned the importance to check if each activity chosen adjusts to characteristics of the community, if it is cost-effective, and if the community would have all the resources needed for its implementation (12, 21). “*To maintain efficiency, the ideal way it is to look for effective interventions that proved to work, then adapt these interventions to the specific community. This adaption could be a part of the implementation research process*” (GMB participant).

Document review shows that not all prioritize activities according to a bidirectional contribution, or socio-cultural base. Some projects have actions not based on evidence, ethics, cost-effectiveness, or resources oriented (table 1).

Monitoring and Evaluation (M&E)

To keep accountability, several control points can be planned for each activity (output indicators) to observe if activities are accepted or need to be replaced to reach the expected results which is called effectiveness and validation of strategies. Monitoring the advancement and behavioral change needs to be dynamic and multidimensional, this means, evaluating not only the target population but its surroundings and supporting actors. If health centers, schools, community, authorities are changing into an enabling environment, the intervention is leading to a

community development. Aspects that show causal loops towards change may include intermediate results (outputs) and final results (outcomes) (2, 4, 20) and dissemination of partial and final results have to be constant.

It was mentioned that vague indicators like improvement of health or happy patients are not easy to measure and the community may not know how to collect this information without bias. For instance, the indicator of high teen pregnancies is difficult to attribute to a project, thus it is better the number of students that go to the consultancy room installed by the project, number of workshops done per classroom, etc. Also, it was noted that cost-effectiveness is critical for feasibility, replicability, sustainability, and scalability. And the participation of stakeholders can help to have better estimate of the cost-effectiveness and this helps prioritization of strategies to implement, etc.

Document revision showed that aspects like clear indicators measured dynamically and multidimensionally, periodical dissemination, feasibility, replicability, sustainability, and scalability are missing in the projects (Table 1).

Discussion

Participation has advantages and is key to reach development, but it remains unclear to what level it needs to be implemented and what are the variables or processes that could lead from community participation to health improvement as mentioned by Rifkin (5). This study demonstrates that success of PAR-CD depends on a complex and dynamic system that contains causal loops, target, and control variables and shows the main gaps in the implemented projects. To our knowledge, this study is the first to display the control variables to include in the design of the project (Fig. 1) and the elements that are not included in the project (table 1) that could endanger the final outcome.

A comparison between the ideal model developed with GMB and the document assessment of the implemented projects shows gaps in several elements. The missing elements for all the countries provide an opportunity to improve participation. Dynamics of time is important to attract and engage a diversity of stakeholders eliciting the present, projection and uncertainty of time of the people involved. Unfortunately, there was no other author that cites a similar aspect. Another element to include is the evidence-based implementation action-package that proved to work and could be adapted in the new setting. This is recently backed-up from the World Health Organizations for projects of sexual and reproductive health with adolescents (16, 22). Other missing elements are interrelated like cost-effectiveness, availability of resources, feasibility, replicability, sustainability, and scalability. If interventions are planned with participation and thinking about bringing change, it is important to consider the availability of resources (financial, time and human). Activities should also consider cost-effectiveness including the viability to be replicated, enlarged to other regions and be sustainable. This goes in line with Cordova-Pozo and Ivanova that present some of these elements (20, 23) and Hainsworth and Brunton that talk about sustainability and scale-up of interventions (15, 17). According to the ideal PAR-CD model, the control variables that should be included in the project are a diversity of stakeholders, a situation analysis that is the base for the actions and a bidirectional contribution based on community knowledge, adapted to the social-cultural situation and based on scientific evidence and ethical approach. The consideration of these elements can increase the success of the project process and of the achievement of community development.

The study was limited to collect all the variables that could influence the PAR-CD from a qualitative and shared perspective. It is possible that group pressure may have pushed people to agree without opposition. Second, the documents assessed may not contain all details of the project procedure and it may have influenced the results and analysis. Future research may focus in quantifying the elements of the model to better estimate effects and impacts. Aspects such as: Do we talk about a few hours per month or per week? What are the tasks the community receives in the intervention? How good they implement the project guidelines or how far they can define the interventions?

Conclusion

This research has demonstrated that part of the success of PAR-CD depends on a complex and dynamic system that contains causal loops and control variables like situation analysis, stakeholders, policy, availability of resources, bidirectional contribution that includes community knowledge, context-based for cultural-social-ethical that provides validity, and evidence based that delivers effectiveness. It also indicates the gaps between an ideal model and what is implemented. Missing key elements could endanger the outcome of achieving health improvement. The results enhance the evidence of the relation between community participation and development to be used by project managers, implementers, project funders, and policy makers.

Abbreviations

CD
Community development
GMB
Group Model Building

PAR
Participation action research
ToC
Theory of change
M&E
Monitoring and evaluation

Declarations

Ethics approval and consent to participate

Consent for publication

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

"The authors declare that they have no competing interests"

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Authors' contributions

KCP conceived the idea and drafted the first version. AH collaborated with the facilitation of the GMB session and the document assessment. MSM, NA, FC collaborated with the organization of the GMB sessions, read and gave feedback in every version. All authors read and approved the version for submission.

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Tables

Table 1

Document assessment of seven case-studies for measuring the level of community participation

Project Phase	Community Participation elements	Sexual and reproductive health				Healthy lifestyles		Malaria	Average	Standard Deviation
		Bolivia	Ecuador	Nicaragua	Cuba	Bolivia	Ecuador	Venezuela		
<i>Principles of Existence</i>								2.46	0.84	
	Health Improvement	3	3	3	3	3	3	3.0	-	
	Diversity of Stakeholder involvement	3	3	3	1	3	1	2.1	1.1	
	Theory of change as a driver	2	2	2	1	3	1	1.7	0.8	
	Accountability	3	3	3	3	3	3	3.0	-	
<i>Needs assessment with the participation of a diversity of stakeholders:</i>								1.71	0.91	
	Situation analysis	3	3	3	2	3	1	2.4	0.8	
	Dynamics of time	1	1	1	1	1	1	1.0	-	
<i>Planning and implementation with the participation of a diversity of stakeholders:</i>								1.73	0.88	
	Bidirectional contribution based on Community knowledge	2	2	2	1	3	1	1.7	0.8	
	Social base	3	3	3	2	3	3	2.7	0.5	
	Cultural base	2	2	2	3	3	3	2.6	0.5	
	Ethical base	3	3	3	1	3	1	2.1	1.1	
	Evidence-base	1	1	1	1	1	1	1.0	-	
	Cost-effectiveness	1	1	1	1	1	1	1.0	-	
	Availability of Resources	1	1	1	1	1	1	1.0	-	
<i>Monitoring and evaluation with the participation of a diversity of stakeholders:</i>								1.68	0.96	
	Outputs indicators	1	1	1	1	3	1	1.3	0.8	
	Periodical dissemination	3	3	3	1	3	1	2.1	1.1	
	Outcome indicators	3	3	3	3	3	3	3.0	-	
	Final dissemination	3	3	3	3	3	3	3.0	-	
	Feasibility	1	1	1	1	1	1	1.0	-	
	Replicability	1	1	1	1	1	1	1.0	-	
	Sustainability	1	1	1	1	1	1	1.0	-	
	Scalability	1	1	1	1	1	1	1.0	-	

Figures

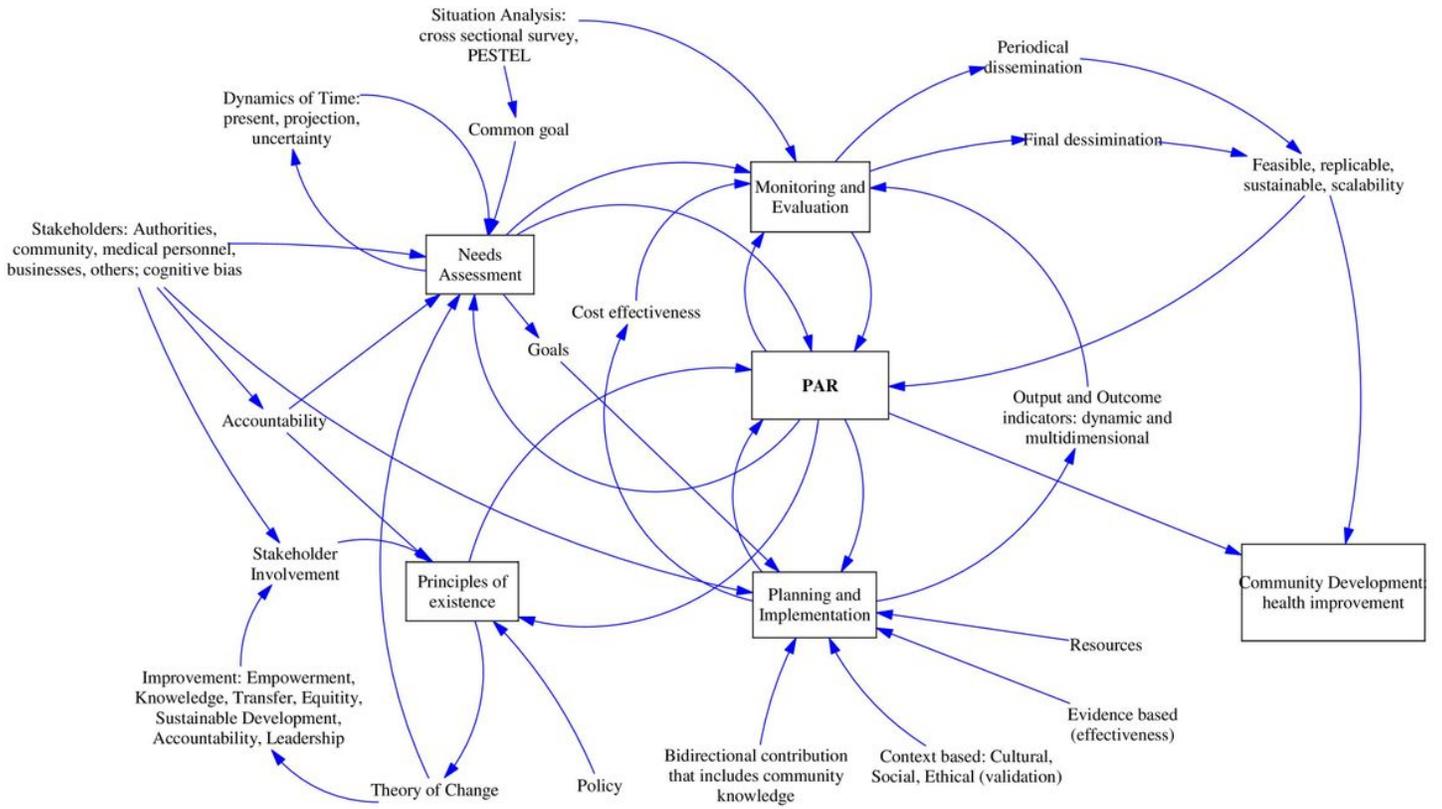


Figure 1

Ideal model that relates the PAR to CD