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Fundamentals of Participatory Action Research in Public Health Investigations: A Literature Review

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Abstract

Participatory Action Research (PAR) has gained increasing recognition in public health as a pragmatic and community-engaged methodology that bridges research and practice through collaboration, inclusivity, and practical problem-solving. However, despite its growing adoption across disciplines, many public health investigations still struggle to apply PAR effectively due to limited understanding of its philosophical foundations, guiding principles, and methodological structure. This lack of conceptual clarity has often led to inconsistent implementation, misinterpretation of participatory practices, and limited community empowerment within health research. To address these challenges, this literature review synthesizes and critically discusses the fundamental components of PAR to guide researchers, practitioners, and policymakers in its effective application. The review elaborates on the three major philosophical paradigms—constructivism, objectivism, and pragmatism—with a particular focus on the pragmatic dimensions of ontology, epistemology, and axiology that inform participatory inquiry. It further traces the historical development of PAR from the early works of Kurt Lewin and Paulo Freire and discusses its core principles of democracy, equity, liberation, and life enhancement that distinguish it from traditional top-down research models. In addition, the review outlines key data collection techniques—such as interviews, focus groups, participant observation, surveys, and Delphi methods—commonly employed in participatory studies, highlighting their strengths and limitations. By consolidating these insights, this review provides a comprehensive understanding of the philosophical and methodological underpinnings of PAR and emphasizes its importance as a transformative approach for producing equitable, contextually relevant, and action-oriented evidence in public health.

Keywords: Participatory action research, public health research, pragmatism, definition.

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Introduction

Public health challenges such as cancer, tobacco-related diseases, and persistent health inequalities are deeply complex, arising not only from biological causes but also from social, cultural, and economic determinants[1-4]. Traditional research approaches, while valuable, have often been criticized for failing

to address these contextual realities, as they frequently adopt top-down methods that exclude the voices of those most affected by the issues under study. This limitation has underscored the need for research approaches that go beyond generating knowledge to actively empower communities, build local capacity, and promote meaningful and sustainable health improvements.[5-7]

In response to this need, Participatory Action Research (PAR) has emerged as a powerful approach that aligns research with social action. PAR is both a methodology and a philosophy of engagement that integrates systematic inquiry with cycles of reflection and practice. Central to PAR is collaboration—it involves participants as co-researchers throughout the research process, from defining problems to implementing and evaluating solutions.[6,8,9] By embedding participation and co-creation at its core, PAR ensures that research findings are not only academically rigorous but also relevant, acceptable, and sustainable for the communities involved.[7,10,11]

Although its use is expanding across disciplines, the application of PAR in public health remains varied, with differences in how its principles, strengths, and challenges are understood.[6,12,13] For researchers, practitioners, and policymakers, a clear understanding of PAR's paradigmatic underpinnings, historical development, guiding principles, and methodological tools is essential if it is to be used effectively in addressing today's complex health issues. This review responds to that need by examining the fundamentals of participatory action research, tracing its philosophical roots, identifying its distinctive principles, evaluating its strengths and challenges, and outlining the data collection techniques most commonly employed. In doing so, it demonstrates why PAR has become an indispensable methodology for public health investigations that aim to not only understand but also transform the conditions that shape human health.

Literature Source

This literature review was conducted through a comprehensive search of peer-reviewed articles indexed in PubMed and Google Scholar. A broad range of keywords related to the fundamentals of participatory action research in public health—including its definition, historical development, guiding principles, data collection techniques, as well as its strengths and challenges—were used to identify recent and relevant publications. The retrieved literature formed the basis for drafting this review.

Pragmatism: The Paradigmatic Foundation of Participatory Action Research Methods

There are various research paradigms underpinning a research process, and these paradigms are concerned with the nature of the world, the interactions within it, and how knowledge is constructed.[14-16] As posited by Creswell and Poth,[17] a research paradigm helps a researcher in the creation of the research aim and objectives and in crafting the strategy for conducting a research process. Among the most commonly discussed paradigms are constructivism, objectivism, and pragmatism.[18-22] Constructivism is based on the belief that reality is socially constructed through human experience and interaction, meaning that knowledge is co-created between the researcher and the participants.[18-20] In contrast, objectivism assumes that reality exists independently of human perception, and that knowledge can be discovered through observation and measurement that remain uninfluenced by personal interpretation.[18-21] Pragmatism, on the other hand, bridges these philosophical extremes by viewing reality as dynamic and shaped by practical consequences. It emphasizes the usefulness of ideas, actions, and results, encouraging the integration of multiple methods to address real-world problems.[14,15,22]

Notably, researchers aligning with constructivism, objectivism, and pragmatism are referred to as constructivists, objectivists, and pragmatists, respectively. However, in this review, only pragmatism and the views of pragmatists are discussed due to the scope of the paper. Pragmatism has its historical roots, which are very peculiar. Historically, pragmatism took its root from the city of Cambridge, Massachusetts, United States of America, in the 1870s, when a group of philosophers, political scientists, social reformers, educationists, and lawyers, including John Dewey, Charles Pierce, Arthur Bentley, George Mead, Nicholas Green, Oliver Holmes, Chauncey Wright, and William James, came together to develop the philosophical doctrine of pragmatism.[15] Since then, pragmatism has become increasingly popular among researchers. Pragmatism has evolved over the past several decades and is currently discussed in many debates under the elements of ontology, epistemology, and axiology.[14,16,17] These three elements (ontology, epistemology, and axiology) play key roles in influencing a pragmatist's choice of research

methods.[14,16,23]

Ontology

Ontology refers to the study of the nature of reality and existence, focusing on what is real, how reality is structured, and whether it exists independently of human perception.[16,24]

The term ontology, an element of research paradigm, was first used in the year 1613, when two philosophers, Rudolf Göckel and Jacob Lorhard, independently used the term in their philosophical books.[24] However, the term appeared for the first time in a lexicon, the Bailey's Dictionary, in the year 1721.[24] Since then, several philosophers have published many literatures on ontology as a topic.[24]

The ontology element seeks to address the nature of reality, to explore whether entities in the human world are real or an abstract construction, and to explore if reality is an individual cognition (i.e. subjective) or objective in nature.[16,17] In ontology, nature refers to the forms and structures of properties, objects, processes, events, and relations in all areas of reality.[25] Among pragmatists, it is believed that reality can exist objectively and independent of human consciousness, and that it can be encountered through social interaction.[23,26] Overall, pragmatists believe that reality could be singular or multiple.[23,26]

Epistemology

Epistemology is the study of knowledge, focusing on how knowledge is acquired, validated, and the relationship between the knower and what is known.[16,27]

The term epistemology, an element of research paradigm, was first used in the mid-19th century by a Scottish philosopher named James Frederick Ferrier.[27] The term epistemology was coined from two Greek words, which are 'episteme' and 'logos', with the former meaning 'knowledge' while the latter means 'the study of'.[28] Since then, different philosophers have attempted defining epistemology in many overlapping ways.[29-31] Overall, their definitions collectively identified epistemology as an element of research paradigm which focuses on the understanding of the nature of human knowledge as well as the relationship between a knower (e.g. a researcher) and what would be known (e.g. what is being researched).[16,28]

In epistemology, knowledge refers to a 'justified true belief' with its key components being truth, belief, and justification.[28,32-35] Something is said to be true if it corresponds to reality or facts.[28,33] Belief refers to a person's mental attitude or state of mind concerning the truth and existence of something regardless of the person having a verified and solid foundation needed to guarantee such truth and existence.[28,36] Lastly, justification refers to a good explanation or reason for something.[28,33] Among pragmatists, the epistemological assumption is that knowledge is fallible, and its acquisition is a self-correcting process that is based on one's experience which can be evaluated and revised based on one's subsequent experience.[15,28,37]

Axiology

Axiology is the philosophical study of values and ethics in research, examining what is considered worthwhile, right, or valuable in the process of inquiry[38,39]. The term axiology, an element of research paradigm, was first used in the early twentieth century by two philosophers, Paul Lapie (in 1902) and Eduard von Hartmann (in 1902).[38] The term axiology was coined from two Greek words, 'axios' and 'logos'.[39] Axios means 'value' or 'worth' while logos means 'the study of.[28,39] Over the past several decades, many works have been published on axiology, where several philosophical stances and debates have been made by researchers adopting different research paradigms.

In a research paradigm, the axiology element refers to the approach to making right decisions or decisions of value, and it entails the examination of values and the foundations upon which value judgements are made.[40,41] Overall, the moral and ethical values of a researcher lie within the element of axiology. In fact, axiology prompts a researcher to consider their own values when making a choice of the methods, design, and data collection techniques they want to adopt for a research endeavour.[42] There are diverse axiological stances on whether research is value-free, value-laden, or value-driven.[42] Among pragmatists, research is value-driven, meaning that some form of unavoidable bias exists in research, and that the values of a researcher reinforce, not obstruct, a research process, and that a researcher can be necessarily biased (but not unacceptably biased) if such bias is needed to accomplish a research process.[43]

Meaning of Participatory Action Research

The three above-identified philosophical elements of pragmatism are what inform the research methods of pragmatic researchers. Notably, pragmatists adopt the

use of mixed methods or pluralistic research methods for their scientific investigations, and one of these methods is participatory action research method.[15,22] Participatory action research has been defined in various ways by researchers across different academic disciplines in the social and behavioural sciences, and these definitions were based on the purpose of the use of participation action research in those disciplines.[5,6,44,45] According to Vollman et al.[9], participatory action research is defined as the "philosophical approach to research that recognizes the need for persons being studied to participate in the design and conduct of all phases (e.g., design, execution, and dissemination) of any research that affects them". Based on the views of Vollman et al.[9], the objectives of participatory action research were to foster community development, empowerment, social justice, capacity, access, and participation. However, according to Maguire 8, participatory action research is defined as "a method of social investigation of problems, involving the participation of oppressed and ordinary people in a problem posing and solving". Based on the views of Maguire 8, the primary objective of participatory action research was to build solidarity between oppressed people and researchers so that both can synergistically work together to bring about a radical social change.

Overall, participatory action research is an approach to scientific investigation in social and behavioural sciences, and it is also an approach where actions are taken to solve a scientific problem or to bring about a change.[6,46,47] Unlike the traditional investigative approaches in social and behavioural sciences, participatory action research fully engages with participants to bring about a change, which may be political, economic, social, or behavioural (e.g. health literacy)[5,6,9,48,49]. Notably, the changes that are brought about through participatory action change impact the researcher, the participants, and the society.[6,8] For example, among researchers and participants, participatory action research can bring about the development of their critical consciousness.[6,8,50] Among participants, the findings from participatory action research can bring improvements to their lives.[6,8] Overall, all these changes invariably may bring positive transformation on human relationships and structures within the society[6,8]

Participatory action research is widely seen as an educative, dynamic, and cyclical process which involves fact finding, acting, and reflecting, which ultimately leads to further scientific inquiry and action for change.[5,6,46,47] To better illustrate that, Figure 1 was used to depict the cycle of events in participatory action research.

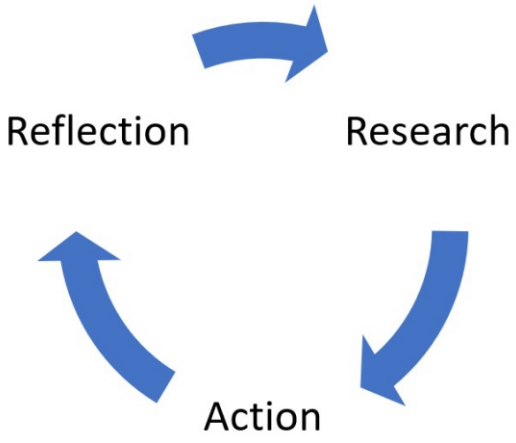

Figure 1. A chart illustrating the sequence of events in participatory action research

In the dynamic process of participatory action research, a researcher conducts their research, reflects, and then acts over a series of cycle till their desired aims and objectives are achieved.[6]

Historical Perspectives of Participation Action Research

Historically, participatory action research originated from a form of research called action research[46]. According to Gills & Jackson (2002), action research is defined as the "systematic collection and analysis of data for the purpose of taking action and making change". The roots of action research and participation action research can be traced to two renowned scholars called Kurt Lewin—a Prussian psychologist—and Paulo Freire—a Brazilian adult educator, respectively[6].

In 1944, Kurt Lewin introduced the term action research[6,46]. Kurt Lewin, a Jewish refugee from the era of the Nazism in Germany who was working in the United States of America and the United Kingdom, tactically introduced "action research" as a term to describe the study of social systems with the purpose of bringing about a social change through client-oriented and cyclical approaches which involves a cycle of continuous enquiry (or research), action, and evaluation (or reflection)[6,48]. Kurt Lewin's identification of action research approach was centred around his philosophy that engaging workers in work-place related decision-making processes motivates

them to do their work better[51]. Kurt Lewin's overall idea of action research was to address problematic issues of assimilation, discrimination, and segregation, and assist people in solving their problems through the initiation of change while assessing the impacts associated with those changes[52].

The ideas of Kurt Lewin were, over the years, built upon by many researchers who were influenced by the action research methods he developed[51]. In 1970, Paulo Freire, in his book entitled "Pedagogy of the Oppressed" emphasised that human beings should not be seen as objects or empty vessels of enquiry, but as full participants in enquiries who have needs and who want a better life[8,48,50]. In this book, Paulo Freire birthed participatory action research as a form of research[6,48]. Paulo Freire's approach to participatory action research was focused on how to empower the impoverished and oppressed people in the Brazilian society on issues concerning literacy, land reforms, and the state of their communities[8,48,50].

Since 1970s, several movements on participatory action research have emerged[8,48,53]. These movements have been seen in various academic fields ranging from social and behavioural sciences to public health[6,48]. Today, several researchers (such as Nina Wallerstein, Barbara Israel, and Meredith Minkler) and notable organisations in the world (such as the World Bank, Centers for Disease Control and Prevention, National Academy of Medicine, and United Nations Educational, Scientific and Cultural Organization) had adopted the use of participatory action research in their projects[48].

Principles and Peculiarities of Participatory Action Research

Regardless of its definitions and its developmental history, participatory action research has its principles and peculiarities[6,13]. Notably, these principles and peculiarities are unique to participatory action research and are arguably lacking in other forms of research methods[10,12,54,55]. These principles, according to Stringer[10], include democracy, equitability, liberation, and life-enhancement.

Participatory action research has a democratic principle in the sense that it allows for all-people participation and inputs in enquiries that are conducted for policy-making processes[10,11,13]. It has the principle of equitability in the sense that it acknowledges the equity of the worth of its participants[10]. It has the principle of liberation because its basic objective is to provide solutions to problems experienced among oppressed, segregated, and discriminated people[8,10,48,50]. Lastly, it has the principle of life-enhancement because it encourages the maximisation of the expression of human potential[6,10].

The peculiarities of participatory action research are noteworthy. According to Selenger[11], an ideal participatory action research process has seven peculiarities. The first peculiarity is that the problem that requires solution through participatory action research originates in the community, and it is identified, assessed, and solved through collective inputs from the community[11,56]. The second peculiarity is that main objective of participatory action research is to radically transform social reality and improve the lives of the targeted people in the society[11,56]. The third peculiarity is that all stages of participatory action research process involve active and full engagement with the community[11,56]. The fourth peculiarity is that participatory action research predominantly engages with underserved populations, such as people suffering from oppression, segregation, and discrimination[8,11,48,50,56]. The fifth peculiarity is that participatory action research provides people with greater awareness of their own resources, and how they can utilise their resources for the development of self-reliance[11,56]. The sixth peculiarity is that participatory action research is more than just a research method because the engagement of the community in its research process maximises the opportunity to conduct a more reliable and accurate assessment of social reality of the community involved[11,56]. Lastly, the seventh peculiarity is that participatory action research provides a researcher the opportunity to be a facilitator, learner, and participant in the research process, which ultimately enhances the commitment of the researcher to all stages of the research process[11,56].

The Strengths and Challenges of Participatory Action Research

Like other forms of research methods, participatory action research has its strengths and associated challenges[6,12,48,54,55]. Participatory action research has five major strengths, all of which are embedded in its core principles[10,11]. The first one is its recognition and appreciation of human beings as social beings, and within the socio-politico-economic context of their society[44]. The second one is it actively and meaningfully engages with its participants in decision making processes on issues where the participants are stakeholders[8]. The third one is that it uses a collective

approach of enquiry which ultimately enhances the sense of ownership among its participants; this, invariably builds trust between the researcher and the community[6,8,44]. The fourth one is that its goal is to build and develop the capacities of underserved or oppressed peoples through their participation in social change[44]. Lastly, the fifth one is that its approach promotes intercultural diversity, as participants with different areas of expertise and social backgrounds are involved in research processes that fosters in-depth understanding critical reflection on social issues[6,45,57,58].

Nonetheless its numerous strengths, participatory action research also has its own associated challenges. These challenges are related to its associated commitment issues, power imbalances, and its time-consuming nature[6,8,13,46,51,59]. Because community members (i.e. participants) are included in a participatory action research team, there is a huge possibility that these included community members might struggle to remain committed throughout the lifecycle of the project[13,46,60]. However, to tackle this challenge, the use of regular and routine interactions (such as the use of reminders) between the researcher and the community members involved on the participatory action research project[60,61].

Possibility of power imbalances cannot be underestimated in participatory action research processes due to potential conflicts that may arise in the areas of prioritisation of problems and solutions that a project is required to address, and analysis and interpretation of project findings[6,46,56,60]. To surmount this potential challenge, participant-researcher relationships that are egalitarian in nature need to be first established before the participatory action research project is initiated[6,8,46]. In the relationship establishment, it is very crucial that the researcher establishes the roles which the participants will be playing[62]; these participatory roles could be contractual, collaborative, collegiate, or consultative[63,64].

In contractual participation, the researcher is the sole decision-maker in most of the decision-making processes of the research project[62–64]. In collaborative participation, the researcher and the participants collaborate, and both are on a more equal footing, with emphasis placed on knowledge exchange, and decision-making power sharing among both parties[62–64]. In collegiate participation, the researcher as well as the participants work together as partners or colleagues; also, in this participatory role, decisions are jointly made via consensus between the researcher and the participants, and responsibility and project ownership are shared between both parties[62–64]. In consultative participation, the key decisions are made mostly by the researcher, but the researcher places emphasis on information gathering and consultation of their participants[62–64]. Overall, the choice of the participatory role of the research participants adopted in a participatory action research project depends on the goals the researcher desires to achieve.

Because participatory action research is a cyclical and iterative research method, it makes its conduct time-consuming[13,60]. The time-consuming nature of participation action research makes it difficult to have consistent full participation in all cycles of the research process due to the associated risks of participant drop-out[60,61]. To reduce this risk, it is recommended that researchers provide incentives to compensate for the time spent by the participants on the research project[13]. Fortunately, the provision of participants with incentives, if properly done through strict compliance with ethical principles, does not produce unjust, unintended, or undue ethical consequences in empirical studies[65,66].

Data Collection Techniques in Participatory Action Research

Data collection, in empirical research, refers to the process of gathering evidence, facts, or information for the purpose of addressing a research objective or question[67,68]. Data collection is a crucial component of empirical research, and it is a major factor which determines the success of a research project[68]. The importance of proper data collection cannot be overemphasised because it helps the researcher obtain reliable evidence, facts, or information which is needed for informed decision-making[68,69]. Also, it is essential for hypotheses testing and drawing of reliable conclusions[68,69].

There are different techniques of data collection in empirical research[68,70]. However, this sub-section focused on the ones used in participatory action research. In participatory action research, the techniques of data collection are designed in a way that the study participants are actively engaged and empowered to contribute their experiences and knowledge while co-creating solutions.[6,46,48,51,52] Common examples of these techniques include one-on-one interview, participant observation, focus group, survey, and Delphi.[6]

One-on-One Interview

One-on-one interview is a form of data collection technique in participatory action research which involves engaging with the participants in a way that enables them to describe their situations and experiences.[71–73] This technique is a form of interaction where the researcher directly questions a participant to elicit in-depth information, insights, experiences, opinions, and ideas from their participants[71,72,74,75] One-on-one interviews can be done using different media; examples of the commonly used media are telephone, online teleconferencing platforms (e.g. Microsoft Teams, Zoom, Webex, Skype, and Google Meet), social media (e.g. Telegram, WhatsApp, and Facebook), and an empty room with chairs (for physical interviews)[76,77]. Also, one-on-one interview may be synchronous (i.e. in real time) or asynchronous, online or face-to-face, and written or oral .[76–78]

One-on-one interviews are of broadly of two types: structured one-on-one interviews and semi-structured one-on-one interviews.[72] Both interview types have their distinct differences. The structured one-on-one interview involves the researcher asking their participant a set of pre-identified questions, and it restricts the participant's responses to the questions they are being asked by the researcher .[72] On the other hand, in unstructured one-on-one interview, the interview session is more flexible and less restricted, and the researcher can probe into interesting information mentioned by the participant .[72]

Overall, the one-one-one interview technique has its strengths and limitations.[71–73,75] Its major strengths include the relative ease of participant recruitment, high answer completeness rate, and the ability to deeply explore information, insights, experiences, opinions, and ideas from a participant.[72,75] Meanwhile, its major limitations include: the time-consuming nature of the transcription of interviews; associated risks of subconscious bias by the interviewer (i.e. the researcher) during data collection; the use of non-probability sampling technique in participants recruitment, which eliminates the chance of equal participation; lack of anonymity of the participants; risk of power imbalance between the researcher and the participant; and the use of small sample size, which limits the chance of generalisability of interview findings.[72,79,80]

Participant Observation

Participant observation, another data collection technique in participatory action research, is a technique in which a researcher participates in the routine (or daily) events, activities, interactions, and rituals of a group of people in order to learn the tacit and explicit aspects of their culture and life routine.81 Participant observation technique can be done using two broach approaches, which can either be based on the researcher's level of transparency with the participants or the level of rigidity of the approach to data collection.[81,82]

Based on the researcher's level of transparency, the approach to participant observation can be either an overt or a covert one. In the overt participant observation approach, the researcher is openly a part of the group of people (who are also the participants) that the researcher is studying, and the group is aware that the researcher is studying them[81,82] In this approach, the researcher plays active roles in the participant group and collects research data from the group while ensuring transparency is maintained.[81,82] The strengths of overt participant observation approach are that it ensures ethical transparency, and it establishes rapport and trust between the researcher and the participants[81,82] However, this approach has its limitation, which is majorly the possibility of the participants altering their behaviours because they are aware that they are under observation by the researcher[81,82]

Notably, the covert participant observation approach is the opposite of overt participant observation approach; here, the researcher conceals their identity, and the participants are not aware that the researcher is studying them[82,83]. The major strength of this approach is that the participants under study are more likely to behave in their true nature, unlike in overt participant observation, because they are not aware that they are being studied by the researcher[82] However, the main limitation of the approach centres around the ethical challenges associated with the approach, as it involves: the researcher concealing their identity, which can eventually be perceived by the participants as a form of deception; and the need for the researcher to balance the need for data collection with ethical considerations, so that the researcher does not harm the trust of their participants.[84,85]

Based on the level of rigidity of the approach to data collection, participant observation technique can either be structured or unstructured.[82] In the structured approach, the researcher uses a systematic manner, which is guided by a predefined framework, checklist, or specific project plan, to collect research data from

their participants[82,86–88] The main strength of the structured approach of participant observation is that it provides the researcher the opportunity to be able to do a comparative analysis of their data because the data collection process followed a predefined and consistent structure.[81,82,86–88] However, the main limitation of structured approach is its rigidity, which may limit the opportunity to record findings outside the scope of the research project's framework, checklist, or specific plan.[81,82,86–88]

On the other hand, the unstructured approach of participant observation is an open-ended and flexible one, unlike the structured one.[81,82,86–90] In the unstructured approach, the researcher records all the findings they observe, and the observations they record from their participants are not restricted by a predefined framework, checklist, or specific project plan.[82,89,90] The main strength of this approach is that it gives the researcher the opportunity to capture robust and detailed findings that might have been missed if a structured approach were used.[82,89,90] However, the unstructured approach is limited by its overwhelming and cumbersome nature, as it lacks a predefined framework, checklist, or specific project plan which guides the data collection process.[82,89,90]

Focus Group

Focus group, another data collection technique in participatory action research, involves interviewing a group of purposively selected participants on a specific topic[6,91,92] Like one-on-one interviews, focus group seeks to elicit information, insights, experiences, opinions, and ideas from their participants, and it can be written or oral, online or face-to-face, synchronous or asynchronous, and structured or unstructured.[93,94]

Nonetheless the similarities between focus groups and one-on-one interviews, focus group has its unique features. Unlike one-on-one interviews, it is cheaper, easier, and quicker to conduct because it can collect greater volume of information, insights, experiences, opinions, and ideas in fewer sessions.[91,95,96] Secondly, focus group provides the participants the opportunity to communicate among one another, rather than to the researcher alone; this promotes free flow of ideas and debates among participants, offering a robust opportunity for collective sense-making among participants.[91] Thirdly, there is minimised researcher influence in focus group which promotes participant-directed interaction; although this has its downsides, such as risk of digression from the topic of interest, but this can be managed by tactically constraining the participants and reasserting control.[91,95,97] Fourthly, the possibility of inter-participant interaction in a focus group provides the opportunity for participants to generate robust and detailed accounts that are fully articulated.[91]

Survey

Surveys, another data collection technique in participatory action research, involves the use of a set of questions to collect data from a group of people.[98–101] This technique involves the use of a questionnaire to collect data from people.[98,102,103] Pertinently, there are some three key factors to consider when considering a survey. The first factor is the sampling of people that will be recruited to participate in a survey (i.e. the participants); here, the goal is to ensure that the sample of participants is sufficiently representative of the population of interest, and that all potential participants are given a chance to participate in the survey.[98,102–104]

The second factor is the questionnaire design. The importance of questionnaire design is surveys cannot be overemphasised.[98,102–105] A well-designed questionnaire should be unbiased, intelligible, unambiguous, appropriate, ethical, piloted, and capable of capturing all possible responses.[98,105] Notably, a questionnaire can contain either open-ended questions only, close-ended questions only, or a combination of both.[98,102–105] Open-ended questions are used to collect qualitative data, close-ended ones are used to collect quantitative data, and a combination of these questions are used to collect mixed data (i.e. both qualitative and quantitative data).[98,102,103]

The third factor is the data collection approach to be used in a survey.[103,106,107] The data collection approach in survey can either be the use of a paper-based or a online-based questionnaire.[106,107] Notably, these two approaches have their peculiarities which are comparable.[106,107] The online-based questionnaire approach, when compared to the paper-based questionnaire approach, has lower costs of administration, is quicker to administer, is not limited by geographical location, has higher completeness rate, is more secured (in terms of data privacy and protection), is less prone to errors, is more environmentally friendly, has lower response rates, has higher response quality, and has higher completeness rate.[106,107]

Overall, the survey data collection technique has its strengths and limitations. Its strengths include its cost-

effectiveness (as it often requires lower costs compared to several other data collection techniques), ability to recruit large sample of participants, its generation of quantifiable research data, efficiency in collecting large volume of qualitative and/or quantitative data within a short timeframe, ability to ensure data privacy and protection of participants, and flexibility of use to cover a broad variety of research topics.[98–101,103,106,107]

The limitations of survey include the possibility of having low response rate (as some invited participants might decide to ignore responding to some questions or might even forget to respond to the questionnaire), response biases (as some participants may not be truthful when providing their responses to the questions they were asked), sampling bias, and limited ability to deeply explore participants' insights, experiences, opinions, and ideas.[98–101,103,106,107]

Delphi

Delphi, another data collection technique in participatory action research, involves the systematic, structured, and iterative gathering of insights, judgements, opinions, and ideas from a group of people (i.e. participants), with the goal of reaching a consensus over complex problems that are uncertain and lacking clear answers.[108,109] The study tool in Delphi is a questionnaire, which—just like surveys—may be open-ended or close-ended, and the participants are oftentimes people who are experts on a subject matter.[98,102,103,108,110–114] However, patients, community members, and other persons who are deemed to be stakeholders on the problem which a Delphi seek to address can also be participants.[113,115-118]

Delphi has four key peculiarities, and they include the following: anonymity of participants, iterative process, controlled feedback, and consensus making.[108,109,119,120] Anonymity in Delphi ensures that the participants do not know each other so that the insights, judgements, opinions, or ideas of a participant is not unduly influenced by that from another participant.[109,120] Anonymity can be accomplished in Delphi through the use of an anonymous questionnaire or the use of a unique identification number to conceal the identity of each participant.[109,120]

The iterative process in Delphi focus on its feedback process, where a series of feedback rounds from the researcher to their participants, allowing the participants to re-evaluate their initial insights, judgements, opinions, and ideas.[109,121] In a Delphi, controlled feedback entails informing each participant about all the insights, judgements, opinions, and/or ideas obtained from other participants so that collective insights, judgements, opinions, and/or ideas can be vocalised to all.[109,120]

Consensus making is a central theme in Delphi[108,110–117] In the context of Delphi, it refers to the overall agreement or convergence of insights, judgements, opinions, and/or ideas that emerges after multiple rounds of consultations with participants have been done.[109,120]

Overall, Delphi has numerous strengths.[122] Firstly, the anonymous engagement of participants in a Delphi ensures that direct confrontations among participants is avoided[122,123]; thus, this enhances the successful conduct of the research process. Secondly, the anonymity promotes honesty and creativity and eliminates the risk of coercion or manipulation to adopt or conform with insights, judgements, opinions, and/or ideas which may arise from power imbalance among participants[109,122,124,125] Thirdly, Delphi connects existing knowledge and areas of disagreement or agreement on a phenomenon of interest[122,125]; this thus ensures that the researcher arrives at robust and more reliable conclusions that are crucial for policy and practice.

Fourthly, Delphi allows participants to contribute to the resolution and understanding of real-life problems; thus, making it one of the most participant-engaging data collection techniques in participatory action research.[109,120,122,124] Fifthly, and finally, Delphi can be conducted without face-to-face researcher-participant or inter-participant contacts, which eliminates communication problems associated with geographical constraints; thus, saving time and travel expenses.[122,124]

Nonetheless the strengths of Delphi, it has its own limitations[122]. Firstly, due to its iterative process, Delphi is laborious and time-consuming, unlike other data collection techniques in participatory action research, for both the participants and the researcher; this therefore increases the risk of participant drop-out in Delphi[101,122,124] Secondly, the anonymity in Delphi, although it has its significant benefits, can create a sense of less ownership among the participants[122,125]. Thirdly, and lastly, Delphi often uses a small sample size; therefore making it difficult to generalise the findings to a wider population.[122,126,127]

Conclusion

Participatory Action Research (PAR) is best suited for

studies that aim to co-produce interventions fostering social change—such as improving health literacy—particularly among disadvantaged populations and communities at heightened health risk, including those vulnerable to conditions like oral cancer. Guided by its core principles of democracy, equitability, liberation, and life enhancement, and supported by diverse participatory data collection techniques, PAR provides a robust and contextually responsive framework for developing interventions that are effective, acceptable, usable, and scalable. In conclusion, PAR stands as both a scientific method and an ethical commitment to co-developing knowledge that drives meaningful health and social transformation. As public health continues to face complex, intersectoral challenges, embedding participatory principles into research, policy, and intervention design is crucial to advancing equity, resilience, and sustainable change. Future research should prioritize standardizing participatory frameworks, strengthening evaluation metrics, and documenting best practices that bridge community voices with evidence-informed policy.

Author contributions

Kehinde Kazeem Kanmodi: conceptualization, resources, methodology, investigation, writing –original draft, writing – review and editing. Yovanthi Anurangi Jayasinghe: Writing –original draft, writing – review and editing. Emeka Benjamin Okeke: Writing –original draft, writing – review and editing. Ruwan Duminda Jayasinghe: writing – review and editing. Misheck Julian Nkhata: writing – review and editing. Lawrence Achilles Nnyanzi: writing – review and editing.

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The lead author Kehinde Kazeem Kanmodi affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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