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# Applying mixed methods in community-based participatory action research: a framework for engaging stakeholders with research as a means for promoting patient-centredness

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## Abstract

An increased focus on patient-centred care in response to national efforts of improving the quality of health care calls for effective approaches to engaging patients and other stakeholders with research and its outcomes. Mixed methods research can provide a rigorous methodological foundation for community-based participatory action research (CBPAR) by synergistically combining qualitative stakeholder engagement methods with quantitative outcome-based oriented approaches for developing evidence-based, scientifically sound and patient-centred plans for improvement. CBPAR has long been applied in nursing research as a tool to engage patients and other stakeholders as co-researchers. When combined with mixed methods, CBPAR can assist stakeholders in developing better appreciation for a data-driven decision-making process by capitalising on the advantages of integrating quantitative and qualitative methods. This paper describes a mixed methods methodological framework for CBPAR as a means for promoting patient-centredness and enhancing stakeholder engagement with research outcomes. It follows the action research methodological steps and captures the synergetic combination of the two approaches by integrating mixed methods into each step in the CBPAR process. This framework is one illustration of using mixed methods to facilitate patient-centred research. It can provide a framework for developing stakeholder engagement plans and facilitating the process of translation of generated evidence into nursing practice.

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**Keywords**

community-based participatory action research, methodological framework, mixed methods research, patient-centredness, stakeholder engagement

**Introduction**

An increased focus on patient-centred care in response to national efforts aimed at improving the quality of health care calls for effective approaches to engaging patients and other stakeholders with the research process and its outcomes (Hughes, 2011; Stults et al., 2015). Patient-centred care focuses on providing health care that is 'respectful of and responsive to individual patient preferences, needs, and values' and uses them to guide all clinical decisions (Institute of Medicine, 2001: 6). Community-based participatory action research (CBPAR) has long been applied in nursing research as a tool to promote patient-centredness and engage stakeholders as co-researchers (Hacker, 2013; Meyer, 2006; Pavlish and Pharris, 2012). Performing research in collaboration with those affected by the issue for the purpose of taking action or making changes increases the likelihood that research findings will be accepted and used by communities (Royal Society of Canada, 1995).

When combined with mixed methods research (MMR), CBPAR can produce more scientifically sound and more transferable research results by synergistically combining qualitative stakeholder engagement methods with quantitative outcome-based oriented approaches for developing evidence-based, scientifically sound and patient-centred plans for improvement of health care delivery. By capitalising on the advantages of integrating quantitative and qualitative methods, CBPAR can assist stakeholders in developing better appreciation for a data-driven decision-making process and creating new and enhanced ways of learning about health-related pertinent issues.

An increased cross-disciplinary expansion of MMR as a sound and pragmatic research approach (Alise and Teddlie, 2010; Ivankova and Kawamura, 2010; Plano Clark, 2010) and the capacity of MMR to intersect with other methodological approaches (Plano Clark and Ivankova, 2016) give enough evidence to suggest that MMR can provide a rigorous methodological foundation for CBPAR to enhance patient-centred inquiry. The ability of MMR to address a range of knowledge generation and knowledge verification questions within a single study (Teddlie and Tashakkori, 2009) makes it an appropriate methodology for exploring complex practical problems from different perspectives and securing a more systematic approach to action/intervention planning, implementation and evaluation. Additionally, developing and implementing action/intervention grounded in a systematic and comprehensive assessment of the problem from stakeholders' perspectives can help efficiently reveal critical areas for targeted intervention and identify effective strategies for improvement. Therefore, the purpose of this paper is to describe a mixed methods methodological framework for CBPAR, as a means for promoting patient-centredness and enhancing stakeholder engagement with research and its outcomes, and illustrate the framework application in nursing research.

**Mixed Methods Research**

MMR is broadly defined as a research approach that emphasises the use of both quantitative and qualitative data, as well as meaningful integration of quantitative and qualitative

methods within a study or a programme of inquiry with the purpose of generating more credible and persuasive conclusions about the research problem (Tashakkori and Creswell, 2007). An increased utility of MMR is due to its ability to address complex research situations and acquire a more complete picture of a problem in practice by obtaining answers to both exploratory and confirmatory questions within a single study (Greene, 2007; Johnson and Onwuegbuzie, 2004; Teddlie and Tashakkori, 2009). Additionally, MMR allows for exploring more divergent viewpoints on the same issue and providing contextual understandings shaped by real-life experiences and cultural influences (Creswell et al., 2011; Morse and Niehaus, 2009; Teddlie and Tashakkori, 2009).

Greene and colleagues (1989) identified five broad reasons for mixing quantitative and qualitative methods to reach justifiable conclusions: triangulation (converging results from different methods), complementarity (elaborating results from one method with results from another method), development (using results from one method to inform another method), initiation (discovering contradiction and new perspectives from using one method with results from another method) and expansion (extending the scope of inquiry by using different methods for different study components). These reasons or rationales for using MMR influence the ways researchers integrate quantitative and qualitative methods within specific mixed methods designs and the role they assign to each method in the research process. The idea of the integration of quantitative and qualitative data sets and subsequent results is central to MMR, and refers to the explicit interrelating of the quantitative and qualitative components within a study (Plano Clark and Ivankova, 2016). This 'strategic relationship among the methods' (Lingard et al., 2008: 460) is one of the key methodological considerations in choosing a mixed methods design (Creswell and Plano Clark, 2011). Other considerations include timing or sequence of quantitative and qualitative data collection and analysis (concurrent, or sequential: qualitative first, or quantitative first), and priority or weighting that each method carries in the process of the study implementation (equal, or prioritising either quantitative or qualitative method).

Three models of mixed methods design logics by which quantitative and qualitative methods can be integrated in a study have been advanced in the mixed methods literature (Creswell and Plano Clark, 2011; Plano Clark and Ivankova, 2016). These include: 1) a concurrent  $\text{Quan} + \text{Qual}$  design, in which quantitative and qualitative data are collected and analysed independent from each other and both sets of results are compared to find corroborating evidence; 2) sequential  $\text{Quan} \rightarrow \text{Qual}$  design, in which quantitative and qualitative data are collected and analysed in sequence using follow-up qualitative data to elaborate, explain or confirm initial quantitative results; and 3) sequential  $\text{Qual} \rightarrow \text{Quan}$  design, in which qualitative and quantitative data are collected and analysed in sequence using quantitative data to generalise, test or confirm initial qualitative results. Using these mixed methods design logics nursing researchers can meaningfully apply MMR with participatory research approaches, such as CBPAR, to enhance translation of evidence-based practice results in the efforts to address a meaningful change (Ivankova, 2015).

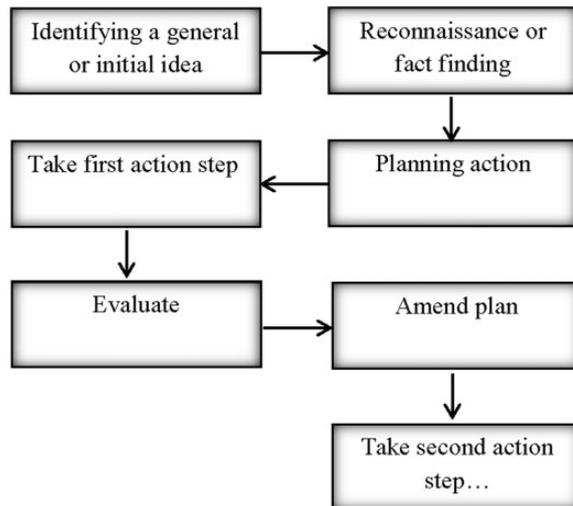
## **Community-based participatory action research**

CBPAR is a methodological approach that focuses on seeking solutions to practical issues, generating evidence-based knowledge for improving practice, and empowering participants for change action (Hacker, 2013; Koshy et al., 2011; McNiff and Whitehead, 2011). The origin of CBPAR can be traced back to the 1940s when Kurt Lewin (1948) introduced the

term action research to describe a research approach that underscores a pragmatic focus, community-based orientation, change action, collaboration between participants and researchers and value of reflection. Since then action research has been adopted as an umbrella term by many researchers across disciplines with reference to research that incorporates participatory and practice oriented approaches. *The SAGE Handbook of Action Research* defines action research as ‘a participatory process concerned with developing practical knowing in the pursuit of worthwhile human purposes’ (Reason and Bradbury, 2008: 4). As a methodological approach, action research ‘seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people’ (p. 4).

Lewin (1948) viewed action research as a cyclical process of four iterative stages of reflecting, planning, acting and observing which include specific action research methodological steps (see Figure 1). The cycle begins with identifying a practical issue of pertinent importance and reflecting on its potential solutions. This step involves reconnaissance or fact finding about the situation that leads to planning and testing an action or intervention, that is, taking the first action step, which is followed by evaluating the initial plan and revising or modifying it for the next action step. The process involves reflection on the action outcomes and what needs to be improved or changed for the next action step. The action research cycle is repeated as many times as needed until the issue is resolved.

Conceptually the CBPAR process involves six iterative phases: diagnosing (identifying the problem), reconnaissance (collecting, analysing and interpreting data about the problem), planning (developing a plan for action/intervention to address the problem), acting (implementing planned action/intervention), evaluation (collecting, analysing and interpreting data about the action/intervention) and monitoring (revising and testing the action/intervention). Action or intervention is central to the idea of CBPAR and requires a spiral of action cycles aimed at planning, implementing and evaluating action/intervention to improve practice (Kemmis, 1982). By observing and reflecting on the effects of intervention,



**Figure 1.** Lewin's (1948) methodological steps in action research process. Reprinted from Ivankova (2015) with permission of SAGE Publishing.

and using this information for planning subsequent action cycles, practitioner-researchers such as nurses and health workers become empowered to make improvements to their working environments and engage patients and other stakeholders in the process of change action. Methodological characteristics of CBPAR are closely related to its dynamic character and cyclical nature, thereby resulting in a systematic and flexible research process that involves collection of multiple data sources and generation and testing of a plan of action/intervention (Hinchey, 2008; Sagor, 2005; Stringer, 2014).

## **Common features of MMR and CBPAR**

There are conceptual and methodological connections between MMR and CBPAR that make the integration of the two approaches possible and justifiable (Ivankova, 2015). These common features are summarised in Table 1 and relate to some similarities in the overarching goals of MMR and CBPAR, their philosophical foundations as being pragmatic and dialectic in nature, and the presence of a strong social justice perspective. Both approaches follow the principles of systematic inquiry and have common methodological and procedural characteristics related to the use of quantitative and qualitative data sources. Both MMR and CBPAR combine insider and outsider perspectives, maintain collaborative and participatory approaches and utilise reflective practices. However, these common features should not be interpreted as ensuring complete and absolute similarity between the two research approaches, but rather as providing common grounds for connecting MMR and CBPAR to produce scientifically sound, contextually relevant and effective plans for action/intervention.

Building on the observed synergy between the two approaches, I have advanced a Mixed Methods Methodological Framework for Action Research (Ivankova, 2015) to help practitioner-researchers apply MMR in the CBPAR process. In the following sections,

**Table 1.** Common features of mixed methods and community-based participatory action research.

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Both follow the principles of systematic inquiry in designing and implementing research endeavours.
Both are aimed at providing comprehensive information: mixed methods research (MMR) to provide comprehensive answers to study research questions, while community-based participatory action research (CBPAR) seeks to provide more comprehensive solutions to practical problems.
Both have an underlying pragmatic philosophical foundation of rejecting the quantitative and qualitative incompatibility thesis.
Both are dialectical in nature, moving from exploratory to explanatory and to confirmatory through identifiable study phases.
Both use reflective practice, as both require reflection about the next step that is grounded in the results from the previous step.
Both apply a transformative/advocacy lens aimed at seeking social justice.
Both use quantitative and qualitative information sources; both collect and analyse quantitative and qualitative data.
Both are cyclical in nature, consisting of clearly defined study phases.
Both apply a collaborative approach to research because they seek knowledge about 'what works' in practice.
Both combine outsider-insider perspectives: in MMR due to a changing researcher's role; in CBPAR due to its participatory nature.

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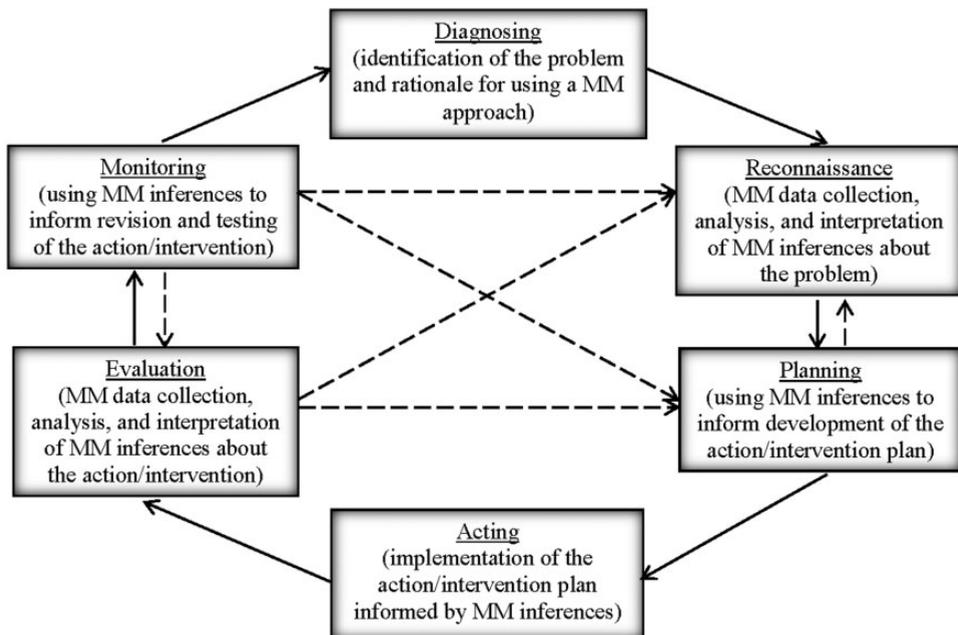
Adapted from Ivankova (2015).

I describe the framework as one of the models for promoting patient-centred research and illustrate its application on the example of Glasson and colleagues' (2006) study that used MMR in the CBPAR cycle to identify an effective model of nursing care for older patients in an acute medical ward in a public hospital in Sydney, Australia.

## Mixed Methods Methodological Framework for Action Research

A Mixed Methods Methodological Framework for Action Research (Ivankova, 2015) conceptually follows the cycle of action research methodological steps outlined by Lewin (1948) and captures the synergetic combination of the two approaches by integrating MMR into each step in the CBPAR process. This framework, depicted in Figure 2, includes six iterative phases (diagnosing, reconnaissance, planning, acting, evaluation, monitoring) during which MMR – or some procedural and conceptual aspects of it – informs and enhances each step in the CBPAR cycle. Each of Lewin's methodological steps is treated as an individual phase because it has clearly defined boundaries with the starting and ending points. Solid arrows between the boxes in Figure 2 indicate the cyclical sequence of the six phases in the CBPAR process, whereas dashed arrows show other possible iterations of the research activities within the CBPAR cycle.

During the *diagnosing phase*, when practitioner-researchers identify the problem that requires solution in the workplace or other community setting, MMR can help conceptualise the problem and identify the rationale for investigating it by using both quantitative and qualitative methods. During the next, *reconnaissance*, or *fact-finding*,



**Figure 2.** Mixed Methods Methodological Framework for Action Research.

MM: mixed methods. Reprinted from Ivankova (2015) with permission of Sage Publishing.

*phase* (Lewin, 1948), MMR can be used when conducting a preliminary assessment of the identified problem in order to inform the development of the action plan or intervention. A systematic and integrative collection and analysis of quantitative and qualitative data during this phase helps generate thorough interpretations of the assessment results and create integrated or mixed methods inferences that inform the development of the plan of action/intervention. During the *planning phase*, practitioner-researchers critically reflect on the mixed methods inferences from the preliminary assessment of the problem, set the action objectives or expected outcomes from the intervention, and design the action/intervention based on these interpretations and reflections. After that comes the *acting phase*, during which the action/intervention plan is implemented. The next step is to conduct a rigorous evaluation of the implemented action/intervention to learn whether it produces the desired outcomes that were set at the planning phase. During the *evaluation phase*, MMR can be used to inform the collection and analysis of quantitative and qualitative data, and interpretation of the integrated results from two data sets. During the *monitoring phase*, practitioner-researchers use the new set of mixed methods inferences generated from the evaluation of the action/intervention and make decisions about the next steps that may involve further revisions or testing of the action/intervention. Based on the evaluation results, practitioner-researchers may decide to continue with the planned intervention and conduct further evaluation of the intervention outcomes, which may lead to further refinement of the action/intervention plan. Alternatively, practitioner-researchers may decide to return to the reconnaissance phase and conduct more in-depth investigation of the problem using MMR and then change the action/intervention plan based on the new mixed methods inferences.

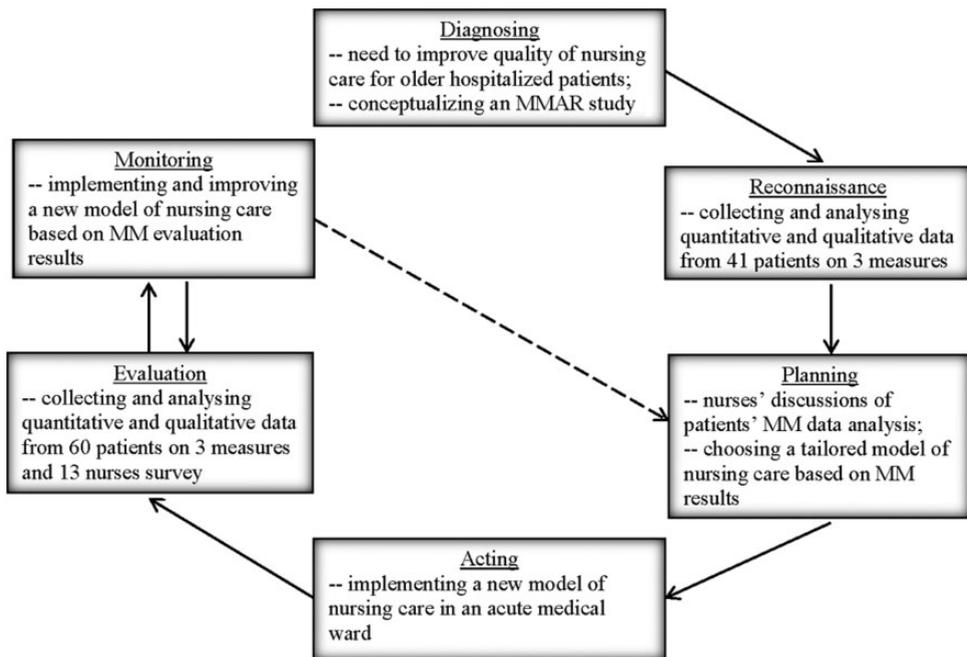
The results of mixed methods evaluation can also help practitioner-researchers recognise that the problem is not well identified or focused and that further diagnosing of the problem is necessary. So, practitioner-researchers may return to the diagnosing and reconnaissance phases to better conceptualise the problem and conduct more needs assessment so that they can develop a revised plan of action/intervention using mixed methods data collection and analysis. If the action/intervention is successful, continuous mixed methods evaluation of its progress can help with intervention monitoring and sustainability, thus enabling transferability of the CBPAR study results to other contexts and community settings.

Consistent with the principles of CBPAR, each phase in the framework involves collaboration with study participants and interested stakeholders whose active involvement can provide support and buy-in for the project success in the community. Stakeholders can be engaged in multiple roles and participate in the study conceptualisation, planning, implementation and evaluation, as well as help with disseminating the study results in the community. Through this engagement stakeholders feel respected and more empowered to make the best decisions regarding the important issues, such as their health and well-being, and help improve the outcomes that are most important to them, thus enhancing patient-centred research (Eisinger and Senturia, 2001; Israel et al., 2001; Patient-Centered Outcomes Research Institute (PCORI), 2012).

## **Application of the Mixed Methods Methodological Framework for Action Research**

In this section, I describe the framework application to Glasson and colleagues' (2006) study. I chose this study because it reports on the full CBPAR cycle and illustrates the application

of MMR in all phases of the research process. In addition, the study addressed one of the current challenges for nursing practice related to the health needs of the increasing older population. The main aim of the study was to improve the quality of nursing care for older acutely ill hospitalised medical patients through the development, implementation and evaluation of a new model of care using MMR and CBPAR approaches. The researchers argued that CBPAR was an appropriate approach for ‘re-evaluating and changing nursing practice not only because of its reflecting process during the stages of planning, taking action in practice, observing, reflecting, and replanning, but also for its similarity to the nursing process through the steps of assessment, planning, implementation, evaluation, and replanning’ (Glasson et al., 2006: 590); whereas the use of MMR and triangulation of quantitative and qualitative data allowed for examining the same phenomenon from both patients’ and nurses’ perspectives and provided in-depth information to help ‘establish an evidence-base for an evolving model of care’ (Glasson et al., 2006: 588). Figure 3 shows how the Mixed Methods Methodological Framework for Action Research can be applied to Glasson and colleagues’ study to explain the process of using MMR in the CBPAR cycle to inform the development and testing of the new model of nursing care. Each box in Figure 3 corresponds with a specific phase in the CBPAR cycle and lists MMR procedures and MMR-informed actions conducted during this phase. Solid arrows show the flow of the activities that were implemented in the study and reported in the article,



**Figure 3.** Application of Mixed Methods Methodological Framework for Action Research to Glasson and colleagues’ (2006) mixed methods action research study.

MMAR: mixed methods action research; MM: mixed methods. Reprinted from Ivankova (2015) with permission of Sage Publishing.

whereas a dashed arrow suggests potential further steps, such as re-planning and revisions of the model to increase its efficacy.

During the first, diagnosing, phase the researchers conceptualised the study, conducted the literature review and developed a general study plan that included both MMR and CBPAR approaches. The review of the literature focused on identifying a guiding model of patient-centred care in a hospital setting. During the next, reconnaissance, phase 41 male and female patients (mean age 78 years) completed the Barthel Activities of Daily Living (ADL) Index questionnaire to identify the aspects of nursing care that acutely ill older patients perceived as being important but found unsatisfactory. Another quantitative instrument included the Caregiving Activities Scale (CAS) questionnaire that was administered to both patients and 14 nursing staff to identify their levels of satisfaction with nursing care on their medical ward. The CAS questionnaire combined both closed-(quantitative) and open-ended (qualitative) items. The planning phase involved weekly researchers' meetings with the nursing staff during which the nurses were able to discuss the aspects of the model of care grounded in the analysis of patients' responses and to interpret the findings from the mixed methods analysis of the survey data. The nurses collaboratively identified a model of care that would address two major concerns, 'encouraging self care and increasing medication knowledge in patients', that were revealed during the reconnaissance phase (Glasson et al., 2006: 590). The nurses also discussed the process of the model implementation, evaluation and monitoring in their ward.

During the model implementation, nurses provided educational and supportive intervention with patients regarding ADLs and medication regime. The outcomes of the model implementation were then evaluated using MMR with another group of 60 acutely ill patients of both genders (mean age 76 years) and 13 nurses working on the ward. Patients' functional activities were assessed on hospital admission and prior to discharge using the ADL Index. Patients' knowledge level about medication administration was also assessed on admission, during the hospital stay and prior to discharge. Finally, before leaving the hospital, patients were asked to complete the CAS satisfaction questionnaire 'to determine whether the implementation of the model of care that was considered to address older patients' identified nursing care issues had resulted in increased patient satisfaction and improved patient care' (Glasson et al., 2006: 593). During the last two weeks of the model implementation process, the nurses in the ward also completed the CAS satisfaction questionnaire that included quantitative items and open-ended questions. The analysis of the quantitative and qualitative evaluation data provided evidence about the efficacy of the new model in improving the quality of nursing care for older patients in an acute medical ward setting. Patients in the new model group were significantly more satisfied with physical care and discharge planning; they showed more knowledge about medication regimes and had higher functional capacity and self-care activities scores. The qualitative results from nurses' comments added understanding of the key concepts related to the process of model development and implementation: barriers to change, enthusiasm to change, collaboration in planning, empowerment in planning, expanding knowledge, and empowerment to change process. The integrated findings suggested that increased focus on individual care and older patients' needs, along with educating patients about medication regimes during the model implementation, promoted a patient-centred approach to nursing care and provided an evidence-base for the new model. Glasson and colleagues reported that further monitoring and improvement of the model was planned during the re-planning stage.

In Glasson and colleagues' study, MMR was used to inform all phases in the CBPAR cycle. During the reconnaissance phase, quantitative and qualitative data were collected and analysed concurrently to assess the situation in the ward and identify patients' concerns with received nursing care. The results informed further discussions among the nurses on the ward to help choose an appropriate new model of nursing care grounded in the views of patients and nurses. The evaluation of the model was conducted through a concurrent collection and analysis of quantitative and qualitative data using the same instruments. The integrated quantitative and qualitative findings provided evidence of the efficacy of the new model of nursing care and outlined directions for its further implementation and monitoring.

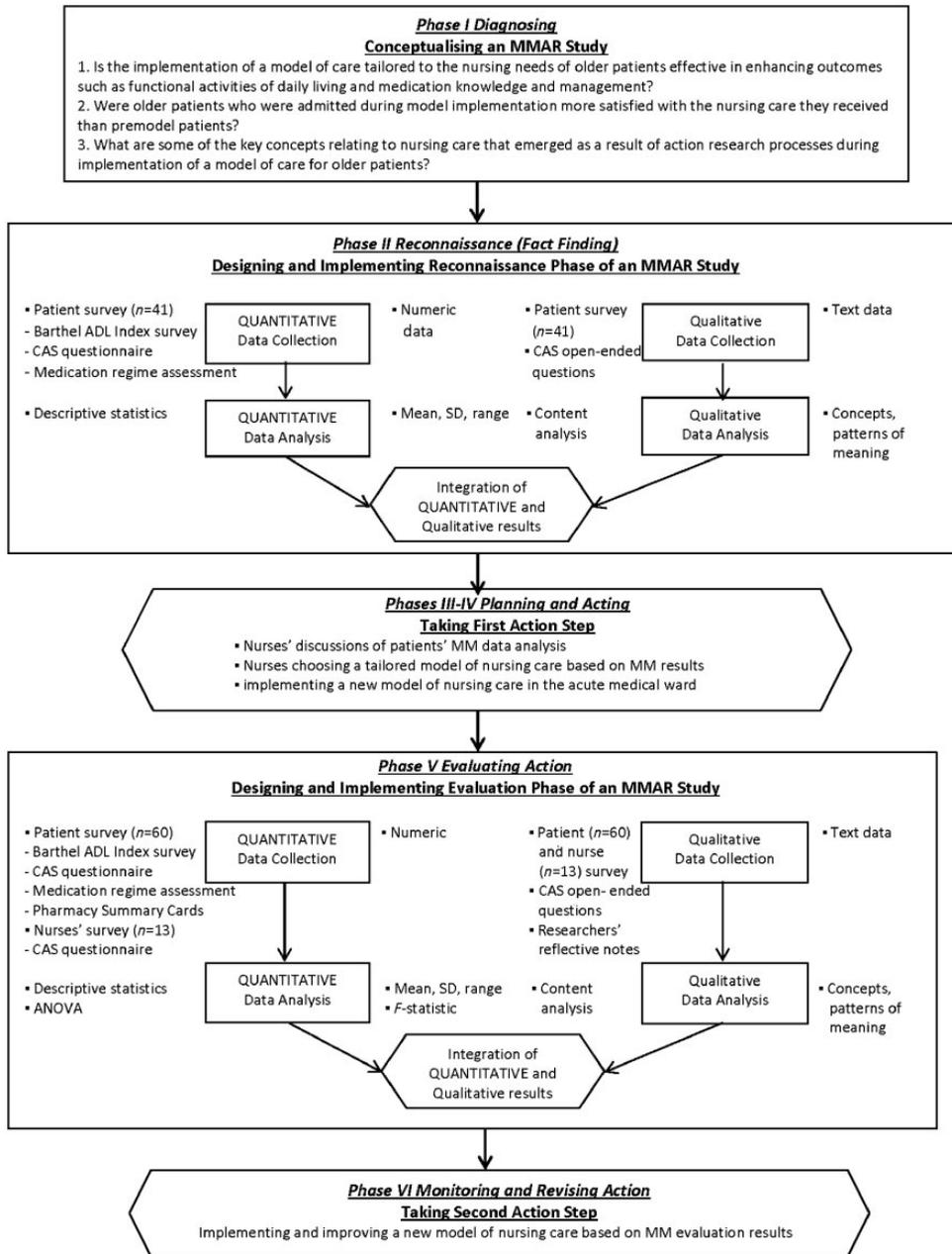
Figure 4 provides a visual representation of the study process and details specific methodological, procedural and action steps for every phase in the CBPAR cycle. It also shows how nurses were engaged in the process of identifying the best fitting model of care and how patients' experiences were assessed before and after the model implementation to inform subsequent action steps. Specifically, Figure 4 shows how the study was conceptualised and implemented as a mixed methods action research (MMAR) study and how each phase in the CBPAR cycle was informed by MMR considerations.

Known as an MMAR Study Process Model (Ivankova, 2015), it delineates the six phases in the Mixed Methods Methodological Framework for Action Research (diagnosing, reconnaissance, planning, acting, evaluation and monitoring) and outlines the specific procedures for each phase. The procedures for the reconnaissance and evaluation phases follow the traditional methodological steps common to all research studies, that is, stating the research purpose, questions and expected outcomes, choosing an MMAR design, identifying the sample, selecting quantitative and qualitative data sources, collecting and analysing quantitative and qualitative data, validating the quantitative and qualitative results and creating the integrated inferences. The purpose, questions and outcomes will differ based on the goals of the reconnaissance and evaluation phases in the context of the studied problem. A sequence of quantitative and qualitative data collection and analysis (concurrent and sequential) and their weighting (equal vs not equal) can also be visually captured to better communicate the MMR procedures to stakeholders unfamiliar with MMR. Importantly, the process model helps understand how MMR, CBPAR and stakeholder engagement are uniquely integrated and interrelated in the pursuit of creating a meaningful change.

## Conclusion

This paper has described a Mixed Methods Methodological Framework for Action Research as a means for promoting patient-centredness and enhancing stakeholder engagement with research and its outcomes. It follows the action research methodological steps and captures the synergetic combination of the two approaches by integrating MMR into each step in the CBPAR process. Engaging stakeholders in every phase of the CBPAR cycle is critical for promoting shared decision-making and ensuring equal power (Israel et al., 2001). However, engaging stakeholders with MMR may be more challenging due to a certain complexity of the study design, methodological procedures related to collection, analysis and integration of quantitative and qualitative data, and the intricacy of interpreting the integrated results from the two data sets. It necessitates building community capacity and forming partnerships with researchers, as well as overcoming barriers for stakeholder participation in the study.

Rigorous CBPAR goes beyond simply solving a problem. It compels practitioner-researchers to reconsider the problem in a more complex way, often leading to a new set



**Figure 4.** The MMAR process based on Glasson and colleagues' (2006) study.  
 MMAR: mixed methods action research; ADL: Activities of Daily Living; CAS: Caregiving Activities Scale; MM: mixed methods; ANOVA: analysis of variance.

of questions or issues (Anderson and Herr, 1999). Incorporating MMR into each CBPAR cycle can help secure a more systematic approach to action/intervention monitoring, thus providing a solid ground for promoting sustainability of change. Additionally, when combined with CBPAR, MMR can help ensure better transferability of the study results to other contexts and community settings and make the findings extend beyond local knowledge and more generally applicable (Hinchey, 2008; Lingard et al., 2008).

The framework presented in this paper is one illustration of using MMR to facilitate patient-centred research. The value and utility of the framework should be further explored and its validity is yet to be established. Importantly, the role of stakeholders, such as patients and their care-givers, in informing every step in an MMAR study process should be more explicitly delineated to ensure their engagement is feasible, sustainable and methodologically sound. However, a growing number of published action research studies in nursing and other disciplines in which MMR was applied at some or all stages in the CBPAR cycle supports the theoretical premises and practical considerations that underline the framework components and their relationships. As such, it can provide a framework for developing patient/stakeholder engagement plans and facilitating the process of translation of the generated evidence into nursing practice. Using the framework to guide a CBPAR process can also help 'bring contextualised clinically relevant findings into programme planning and policy-making arenas toward developing meaningful health and social policies' in nursing practice (Young and Higgins, 2010: 346).

### **Key points for policy, practice and/or research**

- MMR provides a rigorous methodological foundation for CBPAR in nursing.
- Combined with MMR, CBPAR can assist stakeholders in developing better appreciation for a data-driven decision-making process by capitalising on the advantages of integrating quantitative and qualitative methods.
- Combined with MMR, CBPAR provides a means for promoting patient-centredness and enhancing stakeholder engagement with research and its outcomes.
- A Mixed Methods Methodological Framework for Action Research may serve as a framework for developing patient/stakeholder engagement plans and facilitating the process of translation of the generated evidence into nursing practice.

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