

## Series: Practical guidance to qualitative research. Part 6: Longitudinal qualitative and mixed-methods approaches for longitudinal and complex health themes in primary care research

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### KEY POINTS ON LONGITUDINAL QUALITATIVE AND MIXED-METHODS APPROACHES

- Longitudinal qualitative research focuses on how and why health experiences change over time.
- Mixed-methods research intentionally integrates quantitative and qualitative research to address complex health themes.

### ABSTRACT

This article, the sixth in a series aiming to provide practical guidance for qualitative research in primary care, introduces two approaches for addressing longitudinal and complex health themes in primary care research. The first approach – longitudinal qualitative research – supports the study of change during the life course. The second approach – mixed-methods research – integrates quantitative and qualitative research to gain new insights to address the complex and multifaceted themes in primary care.

We discuss the context, what, why, when and how of these approaches and their main practical and methodological challenges. We provide examples of empirical studies using these approaches and sources for further reading.

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Primary care; longitudinal qualitative research; mixed-methods research

## Introduction

Over the years, in our supervisory work, we have noticed that qualitative research tends to evoke many questions and challenges. This article, the sixth in a series aiming to provide practical guidance for qualitative research [1–5], introduces two approaches for addressing longitudinal and complex multifaceted health themes in primary care research.

### Challenges in primary care practice

Primary care encounters challenges in providing high quality, accessible and affordable care for an increasingly ageing, complex, and multi-morbid population, while the relationship between patients and general

practitioners is transforming towards partnership, personalised healthcare and supported self-management [6]. Europe has some of the world's oldest populations – with the most rapidly ageing populations in Southern Europe – and is dealing with elderly people who may experience transitions to functional disability, frailty, and dependence on long-term care [7]. The diverse health problems and complex needs of these patients lead to frequent interactions with multiple health care professionals in different clinical settings. These challenging developments require more and more interprofessional collaboration from general practitioners [8]. Appropriate research approaches are needed to support them in dealing with the complex health issues of current day-to-day practice. In this paper, we will discuss two of these approaches.

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### **Longitudinal and mixed-methods approaches**

Longitudinal qualitative research follows people over time. Therefore, it can provide insights into how people move through their transitions as they interact with primary care and social services, and how they manage their conditions [9]. Longitudinal qualitative research supports understanding of, for example, trajectories of patients with chronic conditions [10], transitions of young people with psychosis moving between specialist mental health services and primary care or processes of general practitioners introducing health promoting physical activity prescriptions in their practice [11,12].

Over the last 15 years, mixed-methods research has become common in primary care and family medicine research [13]. This approach involves the intentional collection of both quantitative and qualitative data and combines the strengths of each to answer research questions [14]. Mixed-methods research can – by addressing, for example, usability and feasibility (e.g. proof-of-concept or pilot studies) – support developing and evaluating of complex interventions in primary care. Longitudinal qualitative research can be part of mixed-methods research projects [15,16].

### **Target audience and content of this article**

We regard this article as an introduction to longitudinal qualitative and mixed-methods research. It is intended as a first acquaintance for researchers – with some experience in qualitative research – who are interested in these methods and general practitioners who will increasingly read articles using these methodologies. We address possible questions about the context and the what, why, when and how of these approaches and their main practical and methodological challenges. We provide examples of published empirical studies in primary care and other health care domains and sources for further reading.

### **Longitudinal qualitative research to understand change during the life course**

#### **Context**

General practice has a tradition of caring for patients and families during their life course. General practitioners face increasing demands for understanding the changes patients with chronic illness or multimorbidity undergo during ageing. Longitudinal qualitative studies can provide insights into continuity and change during the life course and how individual,

health-related, social and environmental factors shape these processes [17]. Published empirical studies using this approach include:

- Threats to patient safety in primary care reported by older people with multimorbidity: baseline findings from a longitudinal qualitative study and implications for intervention [9].
- Longitudinal qualitative study describing family physicians' experiences with attempting to integrate physical activity prescriptions in their practice: 'It's not easy to change habits' [12].
- Using longitudinal qualitative research to explore extra care housing [17].
- Service users' views of moving on from early intervention services for psychosis: a longitudinal qualitative study in primary care [11].

#### **What?**

Longitudinal qualitative research aims to study how and why experiences change over time. It is rooted in the social sciences and emerged as a distinct methodological paradigm around the turn of the millennium [18]. What distinguishes it from other qualitative research is the deliberate emphasis on time and change as the central focus of analytical attention [15]. Longitudinal qualitative research has three distinguishing elements: a longitudinal research question about developmental or causal relationships, a sample that includes multiple data collection points and an analysis that explicitly addresses change over time. Qualitative research is about why and how health issues are experienced, and longitudinal qualitative research focuses on how and why these experiences change over time [17].

#### **Why and when?**

Longitudinal qualitative research offers the possibility of generating more complex and thus realistic understanding of how individuals and patient groups live [18]. It has proved helpful for studying ageing and life course issues, long-term care and process evaluation of complex health interventions [15,19]. Its advantages stem from its ability to take a flexible approach to evaluate interactions between time and context in a non-linear manner [19]. Longitudinal qualitative research can enable participants to experience emotional distance while reflexively viewing past and present events and changing their aspirations for the future. Furthermore, interviews carried out over time

**Table 1.** Longitudinal qualitative research: comparison of recurrent cross-sectional versus longitudinal analysis. Based on Grossoehme et al., [22].

Considerations	Recurrent cross-sectional analysis	Longitudinal analysis
Research focus [findings]	Describe the difference between time points.	Describe how process or experience changes over time.
Sample considerations	The cohort at each time may be the same or different. May be preferred if sample is highly transient or has high mortality over study duration.	Must maintain same cohort.
Theoretical approach	Determined by research question; used consistently throughout the study.	Determined by research question; used consistently throughout the study.
Level of data analysis	Whole sample or subsamples.	Individual people or individual groups, e.g. families.
Timing of analysis	May analyze as each time point is completed.	Must wait until data collection is complete for all time points.

promote familiarity, trust and dialogue between participant and researcher and enable a researcher to raise sensitive topics at a more opportune moment than in a one-off interview [20].

### How?

Longitudinal qualitative research requires researchers' relational awareness and willingness to connect with and care about participants [21]. Furthermore, it requires knowledge and skills to gather, manage and maintain a sizeable qualitative database and to conduct either recurrent cross-sectional or longitudinal analyses (Table 1) [22].

To design the study, qualitative researchers need to consider the theoretical approach and research focus, the sample and the analysis [3,4]. A longitudinal qualitative study requires a research question that addresses a change or time perspective and systematic comparisons of two or more time points [19]. Furthermore, the analysis requires transparency about what is compared, such as codes, domains, interview questions, analytical matrices or cases, and the use of either recurrent cross-sectional or longitudinal analysis. There may be some specific research questions requiring both types of analysis.

## Mixed-methods research

### Context

Mixed-methods research supports understanding the complexity of primary care dealing with patients with diverse health care needs in various settings [13]. This approach integrates qualitative and quantitative methods and provides new insights to improve and address the complex and multifaceted themes of primary care [13]. Published empirical studies using mixed methods include:

- Disease-specific clinical pathways – are they feasible in primary care? A mixed-methods study [23].

- Communication between Dutch community nurses and general practitioners lacks structure: an explorative mixed-methods study [24].
- Computer screening for palliative care needs in primary care: a mixed-methods study [25].
- Implementation of remote consulting in UK primary care following the COVID-19 pandemic: a mixed-methods longitudinal study [16].

### What?

Mixed-methods research focuses on research questions calling for real-life contextual understandings and multi-level perspectives. It employs rigorous quantitative research assessing magnitude and frequency of constructs and rigorous qualitative research exploring the meaning and understanding of constructs. It integrates multiple methods and frames the research within several philosophical and theoretical positions [14].

Integrating qualitative and quantitative data is a central feature of mixed-methods research as it provides additional insight beyond what might be gained from simply collecting and analyzing quantitative data or qualitative data [26,27]. 'Integrating' means the explicit interrelating of the quantitative and qualitative components in a mixed-methods study, e.g. during the data collection-analysis or the interpretation of qualitative and quantitative results [28].

### Why and when?

Mixed-methods research can optimize the breadth and depth of a study and helps take into account the socio-cultural context and the real-world environment to better understand the problem and potential solutions [28]. For example, combining quantitative cross-sectional and qualitative studies and administrative databases might support developing a model for introducing case managers in family care or indicators for evaluation of primary health care [28]. Combining a qualitative study with a randomized controlled trial

**Table 2.** Three common mixed-methods designs, based on Hong et al., and O’Cathain et al., [30,31].<sup>a</sup>

Design	Timing	Purpose
Convergent	QUAL and QUAN components are usually concomitant	Examine the same phenomenon by interpreting QUAL and QUAN results (bringing data analysis together at interpretation stage), or by integrating QUAL and QUAN datasets (e.g. data on same cases), or by transforming data (e.g. quantization of qualitative data).
Sequential explanatory	Results phase 1 – QUAN component inform phase 2 – QUAL component	Explain QUAN results using QUAL findings. E.g. QUAN results guide selection of QUAL data sources and data collection and QUAL findings contribute to interpretation of QUAN results.
Sequential exploratory	Results phase 1 – QUAN component inform phase 2 – QUAL component	Explore, develop and test an instrument (or taxonomy), or a conceptual framework (or theoretical model). E.g. QUAL findings inform QUAN data collection and QUAN results allow statistical generalization of QUAL findings.

<sup>a</sup>QUAN: quantitative; QUAL: qualitative.

**Table 3.** Recommendations for good reporting of a mixed methods study (GRAMMS) [31].

## Describe

- the justification for using a mixed-methods approach to the research question
- the design in terms of the purpose, priority and sequence of methods
- each method in terms of sampling, data collection and analysis
- where integration has occurred, how it has occurred and who has participated in it
- any limitation of one method associated with the presence of the other method
- any insights gained from mixing or integrating methods

might support better understanding of how and why a program works or not [28]. Reasons for mixed-methods research include [28,29]: enhance or build upon qualitative findings with quantitative results and vice versa, provide a comprehensive understanding of a phenomenon (e.g. variables and viewpoints), triangulate results, combine diverse viewpoints, facilitate sampling (e.g. using a survey to select interview participants), and develop and test instruments (e.g. develop a questionnaire using focus groups).

### How?

Researchers can plan a mixed-methods design from the start or use an ‘emergent’ design during a project [26]. Creswell and Hirose described five project steps [27]. First, determine if mixed-methods research is the best methodology for answering the research questions and provide a rationale. Second, identify the quantitative and qualitative sub-questions and the data needed and use rigorous data collection and analysis procedures for each database. Third, determine the mixed-methods design and draw a clear diagram. Fourth, analyse and report under distinct headings the quantitative statistical and the qualitative narrative results as described in previous publications of this series [3,4]. The headings should show the steps in the design and a clear linkage between the quantitative and qualitative components (Table 2). Last, discuss the quantitative and qualitative results side by side in the text or use a table showing the quantitative

results, the qualitative findings and the impact of the integration.

Table 2 presents three most common mixed-methods designs but depending on the research questions, researchers can choose between various designs on a continuum from a predominantly ‘quantitatively driven’ study, via an equal-status/‘interactive’ study to a predominantly ‘qualitatively driven’ study [26,30,31]. Table 3 presents recommendations for reporting [31].

### Challenges and strategies in longitudinal qualitative research and mixed-methods research

We mention the main practical and methodological challenges in longitudinal qualitative and mixed-methods research and provide strategies for addressing these challenges in Table 4 [14,15]. The duration of such research projects will vary but they may demand a continuity of funding, which is difficult to achieve within short term contract funding [32]. For example, a long-term project received core institutional funding and an existing team of researchers supported their involvement with additional freelance work [32]. Investing adequate time and resources is necessary for successfully conducting these projects.

### Further reading

We hope that our introductory paper provides a basic understanding of longitudinal qualitative research and

**Table 4.** Challenges and strategies in longitudinal qualitative research and mixed-methods research, based on Calman et al., and Creswell et al., [14,15].

	Longitudinal qualitative research	Mixed-methods research	Strategies
Funding	Extensive time and resources needed Fundors may be unfamiliar with longitudinal qualitative research	Extensive time and resources needed	Provide clear rationale and make a strong case for the added value of the approach for this health theme
Participants and sampling	Intrusion into people's lives, distortion of experience or dependency due to long-lasting personal relationships with researchers. Attrition due to increasing burdens of health problems or research procedures over time	Convergent design: adequate sample sizes, comparable samples, consistent unit of analysis across databases. Sequential design: deciding on what results from phase 1 to use in phase 2, samples and sample sizes	Adequate time in project plans for project management and communication (including support) with participants
Researchers	Burden due to involvement in sustained relationship with participants over time	Combining quantitative and qualitative components requires knowledge across multiple research methods	Adequate research team, teamwork, debriefing, support, reflexivity
Research team	Large research teams: confidentiality issues over time, different perspectives, researchers who were not involved in data-collection may participate in data-analysis	Multidisciplinary teams: different methodological and philosophical approaches and writing styles	Team leaders anticipate challenges and benefits of teamwork Good teamwork, reflexivity, communication
Data-collection, analysis and interpretation	Large data set requires extensive time for planning, logistics, keeping up to date with participants Complex analyses at multiple levels: within each case and as comparison between cases	Findings may conflict or be contradictory, requiring collecting more data or revisiting databases Unequal emphasis on datasets, accuracy or validity of each dataset Dilemma's in combining quantitative and qualitative research philosophies	Good project management and timing of research steps Flexibility and responsiveness to data, emerging analysis, interpretation Reflexivity
Publishing	Researchers need to justify different qualitative procedures but encounter page and word limitations in journals	Researchers need to justify qualitative and quantitative procedures but encounter page and word limitations in journals	Use tables or figures of procedures and creative ways to present material Choose journals who are familiar with or open to the approach

**Table 5.** Sources for further reading on longitudinal qualitative research and mixed-methods research.

## Longitudinal qualitative research

- Balmer D, Richards BF. Longitudinal qualitative research in medical education *Perspect Med Educ.* 2017;6:306–310.
- Calman L, Brunton L, Molassiotis A. Developing longitudinal qualitative designs: lessons learned and recommendations for health services research. *BMC Med Res Methodol.* 2013;13:14.
- Derrington M. *Qualitative research methods: qualitative longitudinal methods.* Thousand Oaks (CA): Sage; 2019.
- Grosseohme D, Lipstein E. Analysing longitudinal qualitative data: the application of trajectory and recurrent cross-sectional approaches. *BMC Res Notes.* 2016;9(1):1–5.
- Nevedal A, Ayalon L, Briller S. A qualitative evidence synthesis review of longitudinal qualitative research in gerontology. *Gerontologist.* 2019;59:e791–e801.
- Thomson R, McLeod J. New frontiers in qualitative longitudinal research: an agenda for research. *J Soc Res Methodol Int.* 2015;18:243–250.

## Mixed-methods research:

- Creswell JW, Hirose M. Mixed methods and survey research in family medicine and community health. *Fam Med Com Health.* 2019;7:e000086. Doi:10.1136/fmch-2018-000086.
- Creswell JW, Klassen AC, Plano Clark VL, Smith KC for the Office of Behavioural and Social Sciences Research. Best practices for mixed methods research in the health sciences. 2011. National Institutes of Health. [https://obssr.od.nih.gov/sites/obssr/files/Best\\_Practices\\_for\\_Mixed\\_Methods\\_Research.pdf](https://obssr.od.nih.gov/sites/obssr/files/Best_Practices_for_Mixed_Methods_Research.pdf).
- Creswell JW, Plano Clark VL. *Designing and conducting mixed methods research.* 3rd edn. Los Angeles (CA): Sage; 2018.
- Kaur N, Vedel I, El Sherif R, et al. Practical mixed methods strategies used to integrate qualitative and quantitative methods in community-based primary health care research. *Fam Pract.* 2019;36:666–671. Doi:10.1093/fampra/cmz010.
- Mixed Methods Program University of Michigan. <http://www.mixedmethods.org>.
- Schoonenboom J, Johnson R. How to construct a mixed methods research design. *Köln Z Soziol.* 2017;69:107–131.
- Vedel I, Kaur N, Hong QN, et al. Why and how to use mixed methods in primary health care research. *Fam Pract.* 2019;36:365–368. Doi:10.1093/fampra/cmz127.

mixed-methods research for general practitioners and researchers facing longitudinal and complex health themes in primary care. A deeper understanding is necessary to apply these approaches in research projects. Therefore, we provide sources for further reading (Table 5).

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The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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