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How to synthesise original findings back into the literature when the literature has moved on.
An Introduction to Concurrent Analysis

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Background

All studies need to integrate their findings back in to the literature to explain how the new knowledge changes understanding. This process can be anxiety provoking, especially where the new literature appears to threaten the originality of the study.

Aim

This paper introduces a method of synthesising relevant literature with primary data

Method

Concurrent analysis treats all data as primary data. Findings from a doctoral study of the patient experience of vascular access devices are synthesised with relevant literature to illustrate the technique.

Results

Concurrent Analysis raised new questions that would otherwise have remained unknown. For example, it revealed cultural differences in the way patients react to sub-optimal treatment.

Implications for practice

Nurse researchers are best placed to influence policy and practice when they can articulate the transferability of their findings. Concurrent Analysis is a practical method of achieving this.

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Introduction

Doctoral studies and other longitudinal projects usually begin with a literature review to identify a gap in knowledge, and to refine the focus of the study (Dunne, 2011; Future, 2018). It can be years before the research team return to the literature to synthesise their findings, and in this time the literature can have moved on considerably. In some cases, other researchers may have identified the same gap in the literature, or even conducted similar studies. This can be anxiety provoking for novice researchers, who may worry about the threat to originality this poses (Clarke & Lunt, 2014). However, there is a way of turning this threat into an opportunity.

This paper (re)introduces concurrent analysis (CA), a method of synthesising relevant literature with primary data to the end of better understanding the transferability of the original findings. It uses a doctoral study of the patient experience of vascular access devices (VADs) (table 1) to illustrate the technique, and in this case, show how it raised original questions of the new literature that may otherwise have remained unclear. Strengths and weaknesses are discussed, particularly in relation to other metasynthetic methods.

Concurrent analysis

Concurrent Analysis (CA) is a method of synthesising relevant elements of the literature with primary data. It is a process of synthesising any body of text (such as transcribed interview data) with any other conceptually equivalent body of text (such as transcribed interview data published in the literature). It was developed initially as a pragmatic response to the debate on the place of the literature in Grounded Theory (Snowden & Atkinson, 2012). At the time, some grounded theorists maintained that the literature should not be reviewed until the

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study had been completed. The rationale was to avoid bias (Walker & Myrick, 2006).

However, this conflates the logic of two different paradigms, an artefact of the post-positivist origins of grounded theory (Lomborg & Kirkevold, 2003). Attempts to eliminate bias are rational in objective ontology, but make no sense in a constructivist paradigm. Nevertheless, attempts to manage bias persisted, because the philosophical alternative is a type of radical relativism where all claims to knowledge are given equal value. Many grounded theorists at the time therefore chose to use the literature in a traditional manner; to refine and develop the research question *first* (Heath & Cowley, 2004).

However, there was, and is, a more pragmatic alternative, and not just in grounded theory but in any qualitative method where there is dubiety about the relationship between researcher, literature and 'data'. For example, 'bracketing' in phenomenology is designed to avoid bias (Koch & Harrington, 1998), yet bias is inevitable in interpretive research, so the more coherent position would be to acknowledge that bias can't be mitigated by deciding *when* to engage with the literature, but *how*. The literature should be used *as* data where it is conceptually coherent to do so.

This method was called Concurrent Analysis (CA) because it analysed primary data and the literature at the same time, using the same theoretical perspective to maintain a philosophically coherent position (Thagard, 2007). In short, by using the literature as data, CA increases the theoretical depth and breadth of the original study, whilst also clarifying the degree to which the findings are transferable to other contexts (Snowden & Martin, 2010). Ironically, it also mitigates bias. For example, it can be tempting to corroborate qualitative results by finding similar cases in the literature and ignoring anomalies. By contrast, CA *highlights* anomalies. Part of the skill of synthesis is in identifying "*new conceptualisations of*

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the phenomena of interest" (Brunton, Stansfield, & Thomas, 2012, p110), not in piling up examples of similar findings.

METHOD

Process

CA involves three steps. First, 'conceptually equivalent' data is identified, so the researcher is comparing like with like. For example, if the primary research used patient interview data to explore a particular issue, then any patient narrative on the same subject reported in the literature would be considered conceptually equivalent. Second, the analytic process needs to be the same throughout. For example, if phenomenology was used to interpret the primary data, then it should also be used to analyse the new data. Finally, synthesis, sense checking and transferability. Where the analysis of the primary data has captured a transferable finding, much of the new data should fit into the initial interpretation. CA makes it very clear when it does not. Where it does and does not fit articulates the limits of transferability of the original findings. These three steps are illustrated below.

Table 1 here

Analysis

1. Identify conceptually equivalent data

Five new peer reviewed qualitative studies were discovered during the second literature review (table 1). Four of the studies focused on the patient experience of living with peripherally inserted central catheter (PICCs) (Sharp *et al.*, 2014; Alpenberg, Joelsson and

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Rosengren, 2015; Song and Oh, 2016; Parás-Bravo *et al.*, 2018). The final study had a focus on all three vascular access devices (Ritchie, *et al.*, 2015).

To collect data, Sharp *et al.*, (2014) used telephone interviews, Alpenberg, Joelsson and Rosengren, (2015) and Parás-Bravo *et al.*, (2018) used face to face semi structured interviews. Song and Oh, (2016) and Ritchie, et al (2015) both used focus group interviews. All these publications contained verbatim quotes so all these were imported into NVivo™ (QSR International Pty Ltd. Version 13, 2019).

2. Analytic process

The new data were coded line by line using the thematic structure developed in the original analysis. Text was coded at themes and subthemes under the four headings described in the case study. A fifth category of 'none of the above' was also created, designed to capture experiences that did not naturally fit with the four original themes. current Analysis

For example, table 2 shows that in the original study, some of the data was best explained under the heading '*a solution for the self under attack*'. This theme described patients accepting their vascular access devices mainly because of previous poor experiences of peripheral vascular access. They used words like '*stab*' and '*attack*' to recall life before device, describing themselves as feeling helpless; '*at the mercy*' of the staff. This was consistent with patients in the literature experiencing similar trauma, describing their pre-VAD experiences as '*horrible*'... '*pinpricks*', '*black and blue*'... '*pincushions*' (green highlights). The fitting of their vascular access devices made life '*so much easier*' for all, leading to palpable relief as participants compared it to life before (blue highlights). The last code captured instances of descriptions where the VADs worked best, with patients from the literature and the interviews

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describing casually handing over their lines for blood taking, likening the process to being 'topped up with petrol', or not even knowing their bloods had been taken (yellow highlights).

Table 2 here

The other coding example (table 3) comes from the final theme: '*fear of return to violation*'. Often generated by the inability of some staff to use their devices, patients voiced incredulity at having to go back to the trauma of multiple cannulation attempts despite having a device in situ designed, at least in part, to prevent exactly that. On top of this was the added anxiety voiced by many that if clinicians didn't know how to use the devices then they could be at increased risk of infection through improper use. In these cases, patients would refuse to let clinicians use the device. The inconsistency across different teams and individuals seemed to cause the most frustration, articulated by some participants by suggesting a clear need for more training.

Table 3 here

3. Verify: synthesise the original analysis with the new to identify similarities and differences.

On the whole, CA verified the original findings: following often traumatic experiences of peripheral venous cannulation, patients became accustomed to living with a VAD, viewing the device as a better option than painful peripheral cannulation. These findings were consistent across all the data. Later in the process the interviewees were surprised to find that some staff were unable to use their device, or worse, not use it aseptically. Patients became protective of their devices, but were also clearly bewildered and frustrated, especially when the consequence was that they were once again subjected to the painful act of peripheral

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cannulation. These latter findings were consistent with some of the literature but not mentioned at all in others, even in the paper focused on complications of living with a PICC (Parás-Bravo et al., 2016).

Discussion

CA fulfilled its promise of clarifying the transferability of the original findings. It systematically identified similarities and differences that may otherwise not have been immediately apparent using any other method. CA usually starts with a theory, or at least an analytic interpretation of primary data. New data is then compared with this original interpretation to see whether and how it fits or not. It could be argued that CA is therefore only as good as the original analysis, but this is not true. The example presented here has shown that CA is not only a useful method of developing the original analysis further, but also provides a sense check for claims made in the new literature.

A more serious weakness is that the concurrent analyst is completely dependent on the data published by other authors. Authors may not publish data that doesn't support their argument (Van Assen, Van Aert, Nuijten, & Wicherts, 2014), and self-select the data that does (Fanelli, 2012). It was certainly true that negative views of VADs were largely absent from the published literature. Perhaps the only way round this would be to contact individual authors for access, or better still ask all authors to include their anonymised datasets as supplementary files, where it is ethical and safe to do so (Tsai et al., 2016), so that other authors can access all source material.

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However, the main criticism of CA is that there are other, more established methods of synthesising qualitative data. Onwuegbuzie, Leech, & Collins, (2012), for example, claimed to have identified 17 different methods, and many of those had variations. Metasynthesis, for example, includes a range of methods focused on developing theory from a selection of qualitative studies. It reinterprets interpretations (Downe, 2008) to the end of deeper critical reflection. It would not necessarily therefore articulate the transferability of study findings like CA, but then neither would it aim to (Gough, 2013). Metasynthesis purists bemoan such “quick and dirty” technical methods because their focus on generalisability threatens to devalue rigorous metasynthesis (Thorne, 2017). We would argue that CA is no threat to metasynthesis precisely because of this focus (Snowden & Martin, 2010).

Further, the degree to which qualitative findings can be considered generalisable, and in what context, is not just a philosophical argument but a clinical one (Galdas, 2017). Realist synthesis acknowledges this (Berg & Nanavati, 2016), and is probably the most robust method available to qualitative researchers wanting to make a clinical difference. It combines depth, rigour, and addresses practical problems (Pawson, 2006). The major problem with it is that it is very expensive and time consuming, involving large teams of researchers, usually funded by research councils (HS & DR Funding Committee, 2019). It also focuses on answering specific questions using published research, so even if it could be managed by a single researcher, it still wouldn't necessarily integrate this literature with primary findings, unlike CA.

CA doesn't claim to be the only way to integrate qualitative data, but it is a useful tool that is philosophically coherent and practically useful (Snowden, Martin, Jomeen, & Hollins Martin, 2011), particularly for doctoral students who may be looking for a robust method of managing new information at the later stages of their thesis.

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Conclusion

Concurrent Analysis is a robust method of synthesis well suited to integrating new literature with a burgeoning theory. Its purpose is to establish the degree to which one is coherent with the other. It is particularly useful for doctoral students who may have a substantial body of literature to review due to the time that has passed between their initial literature review and the preliminary results of their study. Often this literature can appear particularly daunting where on the face of it similar findings appear to have been published by other authors, threatening the originality of their work. By using this literature as data, CA highlights the differences and negates the threat, instead making a substantial opportunity out of this potentially anxiety provoking time. In the case illustrated here it showed that the researcher's initial interpretation of the primary data was consistent with the new literature, up to a point. The point at which the consistency stopped raised interesting and original questions of the new literature that may not have been immediately clear using any other method.

Word count 2114

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Table 1. Case study

The Vascular Access Device study.

A part-time doctoral study conducted by the first author began in 2013. The literature at the time had revealed that there were many studies of vascular access devices (VAD), but they were mainly quantitative, comparative studies about the superiority of one device over another, and generally from a clinician perspective. No study had focused primarily on the patient experience of living with these devices, and so in 2014 the study set out to explore 'what it was like' to live with a VAD.

The study interviewed eleven patients, each living with one of three devices. It found that, regardless of type of device, patients were unanimously keen to have them fitted in the first instance to stop the pain, distress, and anxiety they experienced of multiple peripheral venous access attempts. All patients got used to having the device in situ, regardless of type, largely forgetting they were there most of the time. In many cases the patients 'embodied' the device: it became part of them, with some even describing it as 'like a piece of jewellery'. Some felt the need to conceal them, to protect their own self-image and to protect others from having to see the device. However, all the study patients subsequently experienced instances where doctors and/or nurses didn't know how to use their particular device. Naturally, the return to pain, distress, and anxiety due to clinicians having difficulty accessing peripheral veins (again) left patients bewildered and dismayed.

The data were analysed using Interpretative Phenomenological Analysis (IPA). Four clear themes encapsulated the issues above: '*The self under attack*'; '*The lesser of two evils*'; '*An act of self – defence*'; '*A fear of return to violation*'. The final phase of the study was to integrate the findings back into the literature, and so a second literature search, mirroring the first one, was conducted to pick up any new studies that may have been published since.

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Table 2: A solution for the self under attack

Examples from interviews	Coding examples	Examples from latest literature
<p>'You sat there with your hands in boiling water, praying that it would work. You felt like you were at their mercy. (Ruby)</p>	<p>At their mercy/helpless</p> <p>Stab</p> <p>Pincushion/prick</p>	<p>...same thing... next one same thing... You (are) black and blue like a pincushion' (Sharp et al., 2014)</p>
<p>'[the line] was so much easier because they'd come in at six in the morning and I'd just go.... There you go (hand them the line). That's a good thing as well, you don't need to get stabbed...attacked by a needle'. (Yasmin)</p>	<p>Attacked</p> <p>Black and blue</p> <p>Horrible</p>	<p>'It was very nice not to be pinpricked every time you're here and get chemo' (Alpenberg, Joelsson, & Rosengren, 2015b)</p>
<p>'It's very nice, rather than having to spend 5 or 10 minutes trying to get the blood samples from me. You've got a high degree of confidence that the thing is going to go. The nurses get what they need' (Sam)</p>	<p>Confident... unlike before</p> <p>Don't have to inject me repeatedly anymore</p> <p>Improves the whole process</p> <p>Avoid the previous horrible</p>	<p>'They don't have to inject me repeatedly. That is the real advantage' (Parás-Bravo et al., 2018)</p>
<p>I just think that it's something that improves the whole process of taking bloods umm, giving transfusions' (Norman)</p>	<p>So much easier</p>	<p>'... it doesn't give me any problems and I have managed to avoid everything that happened the last time.... Just the thought of coming to the unit to receive chemo made me feel sick, not because of the medication, but because of all the previous injections, it was horrible' (Parás-Bravo et al., 2018)</p>
<p>'Whereas, it's [treatment through the PICC] like, it's almost like getting petrol topped up. You just come in, put your arm out and it's a lot less intrusive' (Tina)</p>	<p>Casual: 'Hand them the line'</p> <p>Almost imperceptible:</p> <p>Like petrol topping up</p> <p>I didn't even know they'd done it</p>	<p>'What I felt about the PICC after experiencing it, is that it is easy and comfortable. I didn't need to worry when the nurse came to inject. I didn't even know that they collected my blood through the tube' (Song and Oh, 2016)</p>
<p>'There's no pain. All you feel is the pressure. There is not any pain at all when they are accessing it. You can tell if they are putting it in wrong but it's not sore and if they're hitting the centre you can tell'(Amaya).</p>	<p>There is no pain at all</p> <p>It is easy and comfortable</p>	

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Table Three: A fear of return to violation'

Examples from interviews	Coding examples	Examples from Literature
<p>'No! We're not allowed to do it on this ward, but you can on that ward but here were not allowed to do it – we'll need to get you a staff nurse.' (Ruby)</p> <p>'The only issue is that not everyone is trained to use them because I can get my district nurse to come out and take a sample but if I go to my GP he has to do it through a cannula or a conventional syringe ...and I find that strange particularly as I've got this in place specifically for that purpose and you've got medics that aren't able to use it.' (Sam)</p> <p>'He was in the hospital with a chest infection and he wouldn't let the doctors touch it. He said you can't touch it unless you're qualified' (Wife of John)</p> <p>'I wouldn't mind if they knew what they were doing with it, wouldn't bother me but once when I was unwell, they couldn't find my veins' (Amaya)</p> <p>I said to the nurses, my husband learned in 10mins and he's not medically minded and yet you are nurses and you're not willing to get trained. My 12-year-old used to come and clean it' (Amaya)</p>	<p>Inconsistency</p> <p>Not everyone is trained</p> <p>Some are, some aren't.</p> <p>Specifically, for purpose</p> <p>Don't touch</p> <p>It's my body</p> <p>You don't know what you're doing</p> <p>Fear the worst</p> <p>My 12-yr. old can do it</p>	<p>'when I got (PICC) [I thought] that all blood samples will be managed by the PICC ... but it turns out that they (health professionals) don't dare to do it at the health clinics. I don't know why (Alpenberg, et al 2015)</p> <p>'It's self-preservation and I have been quite happy to say to people, eh, excuse me, you don't know what you're doing... eh, don't touch my Hickman line (TCVC)' (Ritchie, et al., 2015)</p> <p>'...I could get something in it... blood poisoning, anything. ..I always imagine the worst.' (Alpenberg, Joelsson and Rosengren, 2015)</p>